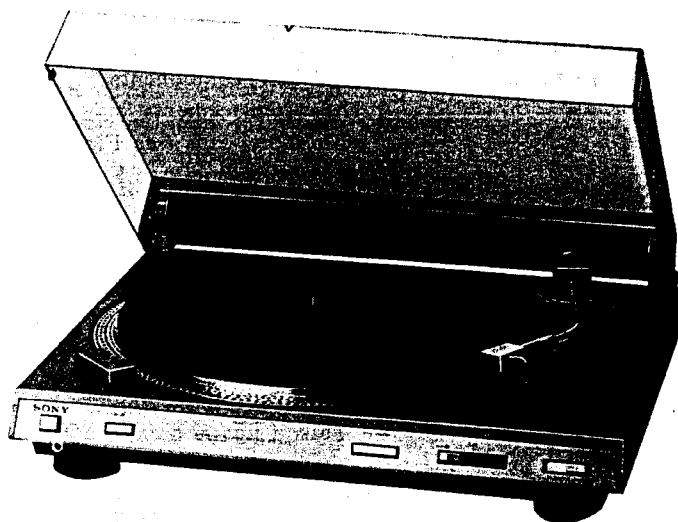


# PS-333

*US Model  
AEP Model  
E Model  
SCN Model  
Canadian Model  
UK Model*



## STEREO TURNTABLE SYSTEM

### SPECIFICATIONS

#### GENERAL

**Power Requirements:** 120 V ac, 60 Hz (US, Canadian model)  
220 V ac, 50/60 Hz (or 240 V ac adjustable  
by authorized Sony personnel)  
(AEP, SCN model)  
240 V ac, 50/60 Hz (or 220 V ac adjustable  
by authorized Sony personnel)  
(UK model)  
110, 120, 220, 240 V ac adjustable, 50/60 Hz  
(E model)

**Power Consumption:** 6W

**Dimensions:** Approx. 430 (w) x 125 (h) x 365 (d) mm  
17 (w) x 4 <sup>7</sup>/<sub>8</sub> (h) x 14 <sup>3</sup>/<sub>8</sub> (d) inches  
including projecting parts and controls

**Weight:** Approx. 5.5 kg, 12 lb 2 oz (net)  
Approx. 6.7 kg, 14 lb 12 oz (in shipping carton)

#### TURNTABLE

**Platter:** 32.4 cm (12 <sup>3</sup>/<sub>4</sub> inches), aluminum-alloy diecast

**Motor:** Linear BSL (brushless and slotless) motor

**Drive System:** Direct drive

**Speed:** 33 <sup>1</sup>/<sub>3</sub> rpm, 45 rpm

**Starting Characteristics:** Comes to nominal speed within a half  
revolution (33 <sup>1</sup>/<sub>3</sub> rpm)

**Wow and Flutter:** ±0.045% (DIN) (AEP, UK, E, SCN model)  
0.03% (WRMS)

**Signal-to-Noise Ratio:** 70 dB (DIN-B)

**Automatic System:** Lead-in, return, reject

— Continued on page 2 —

#### ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UN TRAMÉ ET  
UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉ-  
MATIQUES, LES VUES EXPLOSÉES ET LA LISTE  
DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ  
DE FONCTIONNEMENT. NE REMPLACER CES  
COMPOSANTS QUE PAR DES PIÈCES SONY DONT  
LES NUMÉROS SONT DONNÉS DANS CE MANUEL  
OU DES SUPPLÉMENTS PUBLIÉS PAR SONY.

#### SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK  
⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED  
VIEWS AND IN THE PARTS LIST ARE CRITICAL TO  
SAFE OPERATION. REPLACE THESE COMPONENTS  
WITH SONY PARTS WHOSE PART NUMBERS APPEAR  
AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS  
PUBLISHED BY SONY.

# SONY®

## SERVICE MANUAL

## TONEARM

Type: Statically balanced, universal  
 Pivot-to-Stylus Length: 216.5 mm (8 1/2 inches)  
 Overall Arm Length: 290 mm (11 1/2 inches)  
 Overhang: 16.5 mm (21/32 inches)  
 Tracking Error: +3°, -1°  
 Tracking Force Adjustment Range: 0–3 g  
 Total of Cartridge and Headshell Weight Range: 11.5–19 g

## CARTRIDGE VL-37G

Type: Moving magnet  
 Frequency Range: 10–20,000 Hz  
 Channel Separation: More than 23 dB (1 kHz)  
 Output Voltage: 3 mV (1 kHz, 3.54 cm/s, 45°)  
 Suitable Load Impedance: 50 kΩ  
 Tracking Force: 1.5–2.5 g (2 g) (recommended value)  
 Replacement Stylus: Sony ND-137G (conical 0.6 mil diamond)  
 Weight: 13 g including the headshell

## MODEL IDENTIFICATION

— Specification Label —

<b>SONY.</b>	STEREO TURNTABLE SYSTEM
	MODEL NO PS-333
	SERIAL NO.
	MADE IN JAPAN

US, Canadian model . . . . AC 120 V      60 Hz    6W  
 AEP, SCN model . . . . . AC 220 V      50 Hz    6W  
 E model . . . . . AC 110, 120, 220, 240 V      50 Hz    6W  
 UK model . . . . . AC 240 V      50 Hz    6W

# MELF (Metal Electrodes Face-Bonding) Components (AEP, E Model)

## Warning

If MELF components are forcibly removed from the printed circuit board with pincers or pliers, the circuit board pattern is likely to peel away. Always remove MELF components according to the procedure described on the next page. Replace MELF components with the lead type components.

MELF components are soldered directly to the surface of the printed circuit board.

MELF resistors and capacitors have the same dimensions and are distinguished by their background colors: light brown for resistors, and pink or light green for capacitors.

The MELF resistor color coding is the same as for conventional resistors, and MELF capacitor color coding is the same as for tube-type ceramic capacitors. Note, however, that all MELF resistors are rated at  $\frac{1}{4}$ W and  $\pm 5\%$ .

Components larger than resistors and without a color code are cross conductors, which are used instead of jumper wires.

## 1. Structure

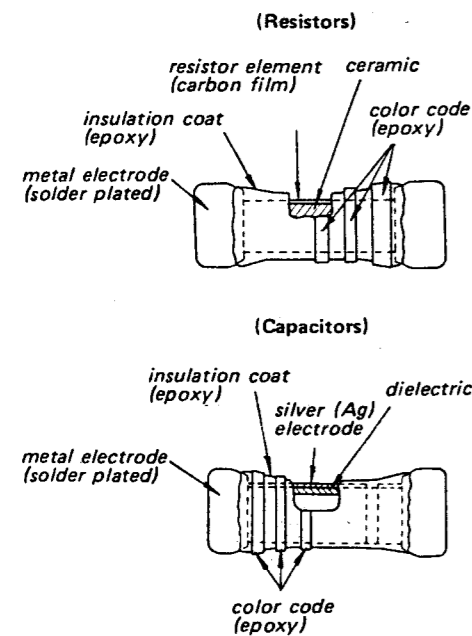
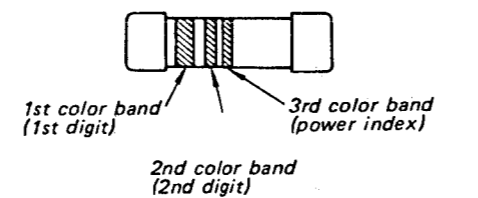
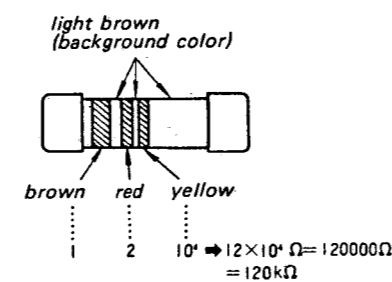


Fig. 1

## 2. Color Code Reading



### (Example of Resistor)



### (Example of Capacitor)

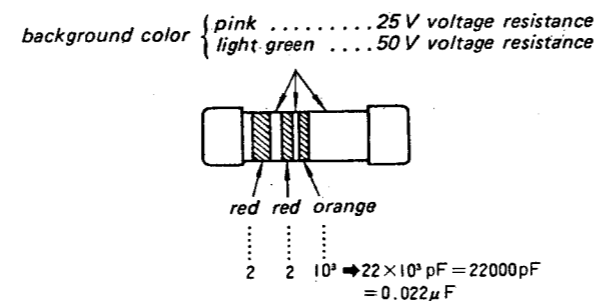


Fig. 2

## 3. How to Remove MELF Components and Mount Replacements

Use a soldering iron of at least 40W with an iron tip 4 mm in diameter and file the tip down to the angle shown in the diagram.

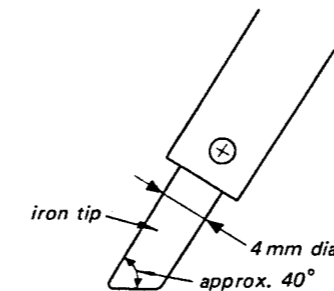


Fig. 3

1. Bring the flat surface of the soldering iron in equal contact with both soldered ends of the component.
2. The solder should melt in about 4 seconds. (The solder will melt more readily if a small amount of solder is attached to the iron tip and the iron tip is placed against the component.)
3. Once the solder has melted, tap the component aside with the tip of the soldering iron, and remove it from the board.

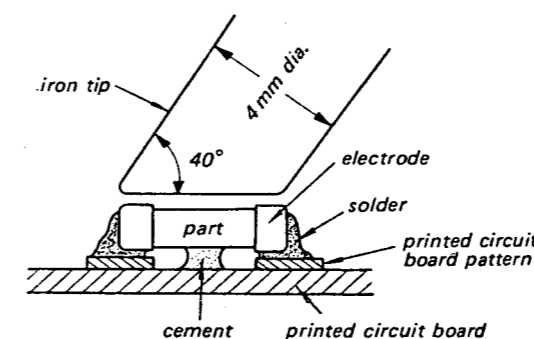


Fig. 4

4. Use lead type resistors or capacitors to replace the MELF components. These replacements may be mounted either with short leads (see Fig. 5), or by covering a lead with tubing (see Fig. 6).

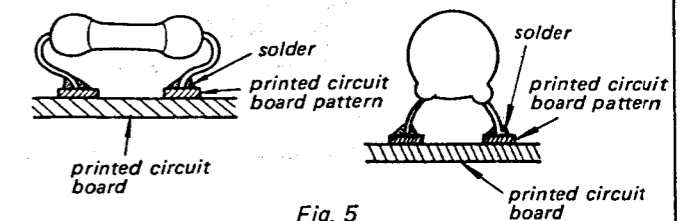


Fig. 5

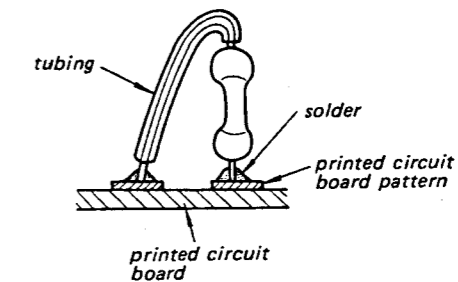
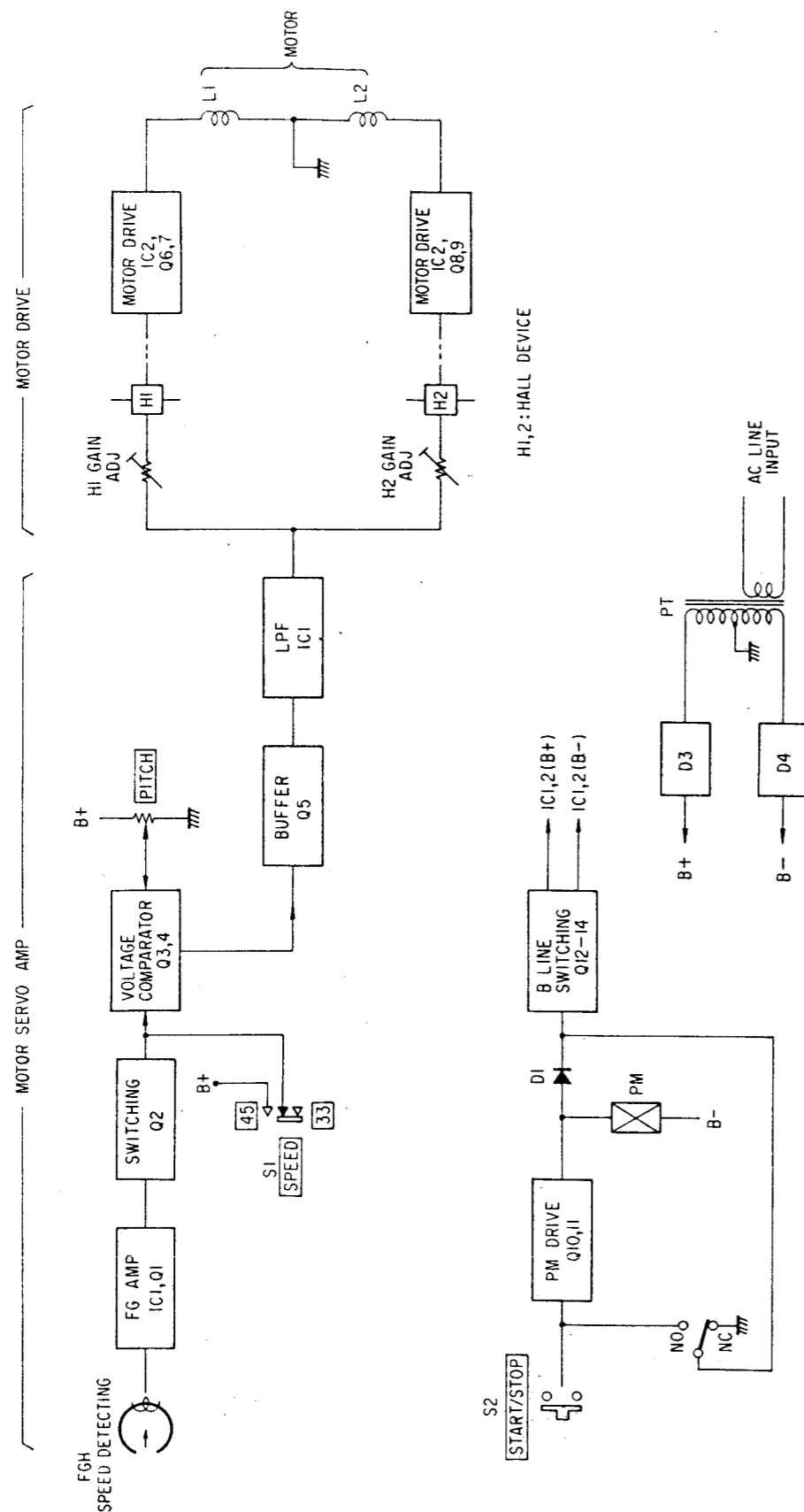


Fig. 6

# SECTION 1 OUTLINE

## 1-1. BLOCK DIAGRAM



P3-333 P3-333

## 1/4 WATT CARBON RESISTORS <sup>(A)</sup>

Note: Circled letter <sup>(A)</sup> is applicable to European models only.

$\Omega$	Part No.	$\Omega$	Part No.	$\Omega$	Part No.	$\Omega$	Part No.	$\Omega$	Part No.	$\Omega$	Part No.	$\Omega$	Part No.
1.0	1-246-401-00	10	1-246-425-00	100	1-246-449-00	1.0k	1-246-473-00	10k	1-246-497-00	100k	1-246-521-00	1.0M	1-246-545-00
1.1	1-246-402-00	11	1-246-426-00	110	1-246-450-00	1.1k	1-246-474-00	11k	1-246-498-00	110k	1-246-522-00	1.1M	1-210-814-00
1.2	1-246-403-00	12	1-246-427-00	120	1-246-451-00	1.2k	1-246-475-00	12k	1-246-499-00	120k	1-246-523-00	1.2M	1-210-815-00
1.3	1-246-404-00	13	1-246-428-00	130	1-246-452-00	1.3k	1-246-476-00	13k	1-246-500-00	130k	1-246-524-00	1.3M	1-210-816-00
1.5	1-246-405-00	15	1-246-429-00	150	1-246-453-00	1.5k	1-246-477-00	15k	1-246-501-00	150k	1-246-525-00	1.5M	1-210-817-00
1.6	1-246-406-00	16	1-246-430-00	160	1-246-454-00	1.6k	1-246-478-00	16k	1-246-502-00	160k	1-246-526-00	1.6M	1-210-818-00
1.8	1-246-407-00	18	1-246-431-00	180	1-246-455-00	1.8k	1-246-479-00	18k	1-246-503-00	180k	1-246-527-00	1.8M	1-210-819-00
2.0	1-246-408-00	20	1-246-432-00	200	1-246-456-00	2.0k	1-246-480-00	20k	1-246-504-00	200k	1-246-528-00	2.0M	1-210-820-00
2.2	1-246-409-00	22	1-246-433-00	220	1-246-457-00	2.2k	1-246-481-00	22k	1-246-505-00	220k	1-246-529-00	2.2M	1-210-821-00
2.4	1-246-410-00	24	1-246-434-00	240	1-246-458-00	2.4k	1-246-482-00	24k	1-246-506-00	240k	1-246-530-00	2.4M	1-244-754-00
2.7	1-246-411-00	27	1-246-435-00	270	1-246-459-00	2.7k	1-246-483-00	27k	1-246-507-00	270k	1-246-531-00	2.7M	1-244-755-00
3.0	1-246-412-00	30	1-246-436-00	300	1-246-460-00	3.0k	1-246-484-00	30k	1-246-508-00	300k	1-246-532-00	3.0M	1-244-756-00
3.3	1-246-413-00	33	1-246-437-00	330	1-246-461-00	3.3k	1-246-485-00	33k	1-246-509-00	330k	1-246-533-00	3.3M	1-244-757-00
3.6	1-246-414-00	36	1-246-438-00	360	1-246-462-00	3.6k	1-246-486-00	36k	1-246-510-00	360k	1-246-534-00	3.6M	1-244-758-00
3.9	1-246-415-00	39	1-246-439-00	390	1-246-463-00	3.9k	1-246-487-00	39k	1-246-511-00	390k	1-246-535-00	3.9M	1-244-759-00
4.3	1-246-416-00	43	1-246-440-00	430	1-246-464-00	4.3k	1-246-488-00	43k	1-246-512-00	430k	1-246-536-00	4.3M	1-244-760-00
4.7	1-246-417-00	47	1-246-441-00	470	1-246-465-00	4.7k	1-246-489-00	47k	1-246-513-00	470k	1-246-537-00	4.7M	1-244-761-00
5.1	1-246-418-00	51	1-246-442-00	510	1-246-466-00	5.1k	1-246-490-00	51k	1-246-514-00	510k	1-246-538-00	5.1M	1-244-762-00
5.6	1-246-419-00	56	1-246-443-00	560	1-246-467-00	5.6k	1-246-491-00	56k	1-246-515-00	560k	1-246-539-00		
6.2	1-246-420-00	62	1-246-444-00	620	1-246-468-00	6.2k	1-246-492-00	62k	1-246-516-00	620k	1-246-540-00		
6.8	1-246-421-00	68	1-246-445-00	680	1-246-469-00	6.8k	1-246-493-00	68k	1-246-517-00	680k	1-246-541-00		
7.5	1-246-422-00	75	1-246-446-00	750	1-246-470-00	7.5k	1-246-494-00	75k	1-246-518-00	750k	1-246-542-00		
8.2	1-246-423-00	82	1-246-447-00	820	1-246-471-00	8.2k	1-246-495-00	82k	1-246-519-00	820k	1-246-543-00		
9.1	1-246-424-00	91	1-246-448-00	910	1-246-472-00	9.1k	1-246-496-00	91k	1-246-520-00	910k	1-246-544-00		

## HARDWARE NOMENCLATURE

Screw:

P 3 x 10

L: Length in mm

D: Diameter in mm

Type of head

Indicated slotted-head only.

Unless otherwise indicated, it means cross-recessed head (Phillips type).

Nut, Washer, Retaining ring:

N 3

Diameter of usable screw or shaft

Reference designation

Reference Designation	Shape	Description	Remarks
SCREWS			
P		pan-head screw	binding-head (B) screw for replacement
PWH		pan-head screw with washer face	binding-head (B) screw and flat washer for replacement
PS PSP		pan-head screw with spring washer	binding-head (B) screw and spring washer for replacement
PSW PSPW		pan-head screw with spring and flat washers	binding-head (B) screw and spring and flat washers for replacement
R		round-head screw	binding-head (B) screw for replacement
K		flat-countersunk-head screw	
RK		oval-countersunk-head screw	
B		binding-head screw	
T		truss-head screw	binding-head (B) screw for replacement
F		flat-fillister-head screw	
RF		fillister-head screw	
BV		brazer-head screw	

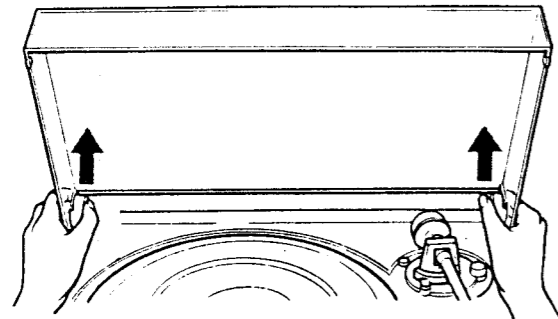
Reference Designation	Shape	Description	Remarks
SELF-TAPPING SCREWS			
TA		self-tapping screw	ex: TA, P3 x 10
PTP		pan-head self-tapping screw	binding-head self-tapping (TA, B) screw for replacement
PTPWH		pan-head self-tapping screw with washer face	binding-head self-tapping (TA, B) screw and flat washer for replacement
PTTWH		pan-head thread-rolling screw with washer face	binding-head (B) screw and flat washer for replacement
SET SCREWS			
SC		set screw	
SC		hexagon-socket set screw	ex: SC 2 Ex 4, hexagon socket
NUT			
N		nut	
WASHERS			
W		flat washer	
SW		spring washer	
LW		internal-tooth lock washer	ex: LW3, internal
LW		external-tooth lock washer	ex: LW3, external
RETAINING RINGS			
E		retaining ring	
G		grip-type retaining ring	

SECTION 2  
DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

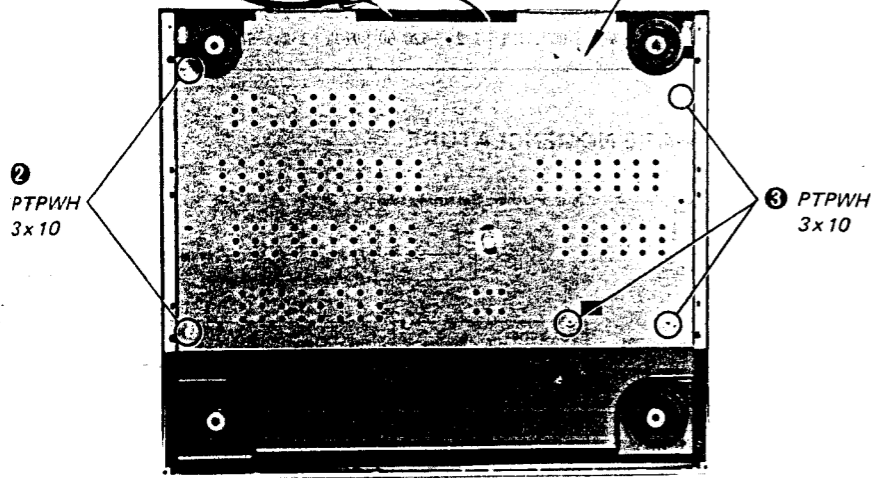
DUST COVER

To remove the dust cover, open the dust cover fully and slide it as illustrated while holding it with both hands.

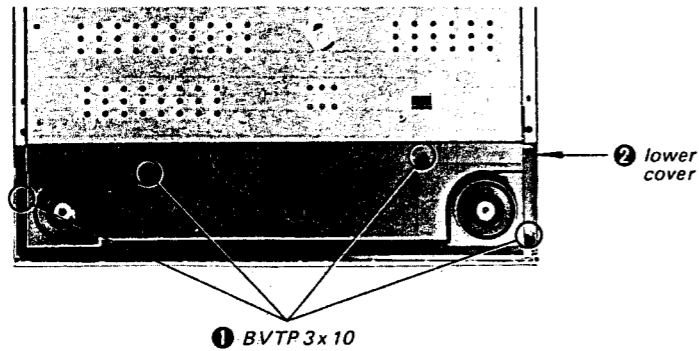


BOTTOM PLATE

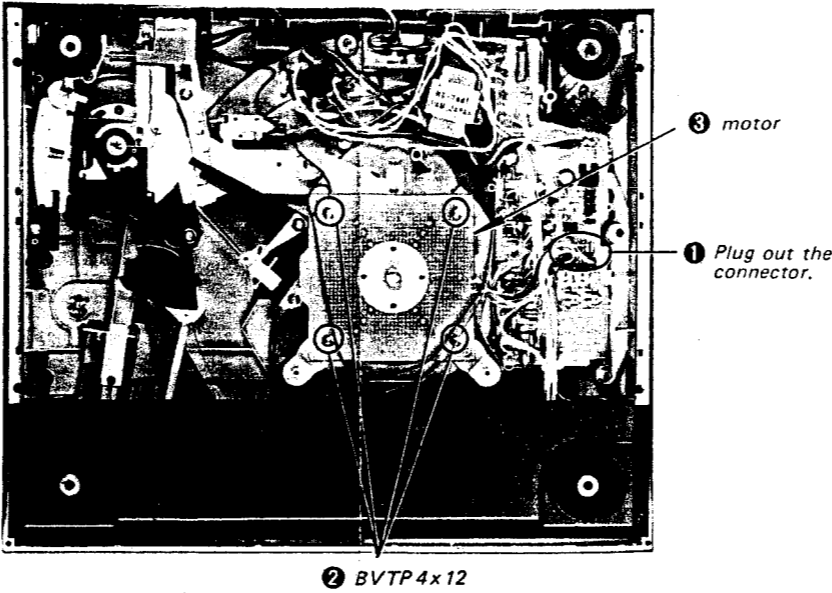
- 1 Remove the rubber mat and the turntable.
- 4 bottom plate



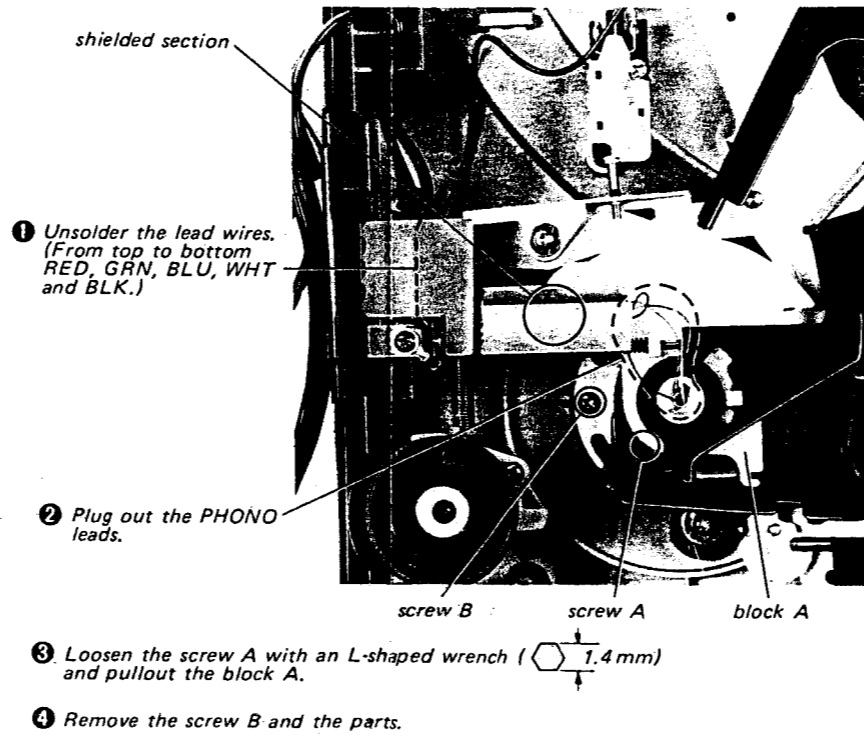
LOWER COVER



MOTOR

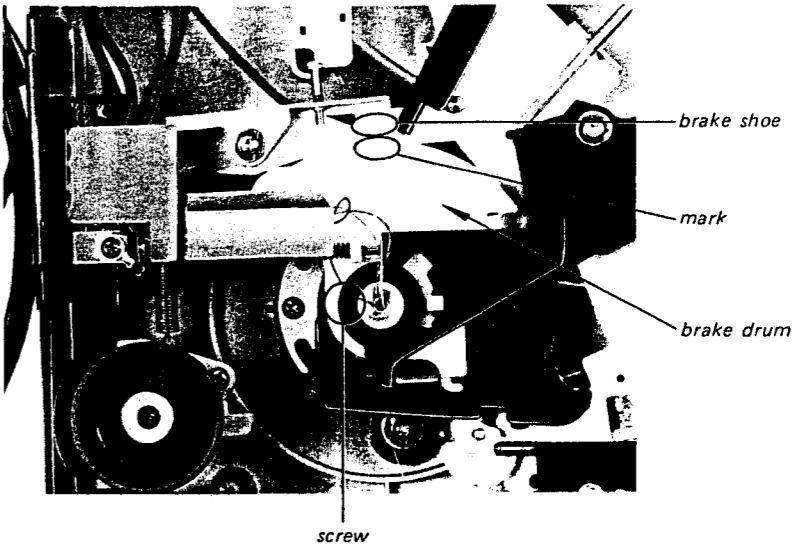


TONEARM BLOCK



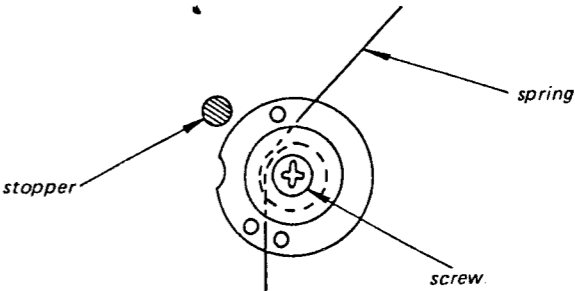
BRAKE DRUM INSTALLATION

1. Secure the tonearm to the arm rest.
2. Loosen the screw and adjust the brake drum mark to the brake shoe as shown.
3. Tighten the screw.



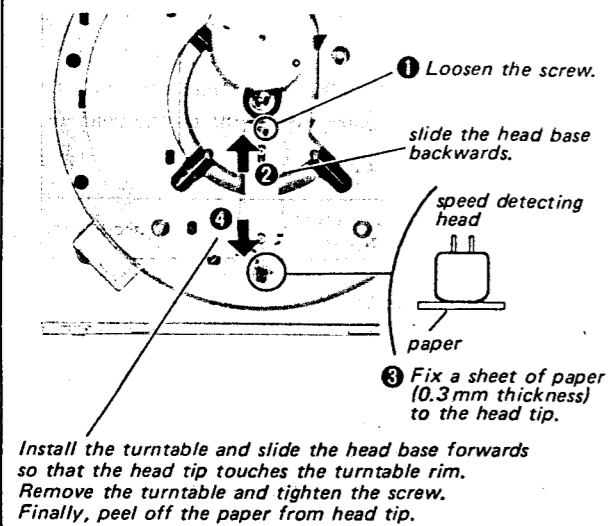
ANTI-SKATING COMPENSATOR KNOB INSTALLATION

1. Set the anti-skating compensator knob to mark "0".
2. Install the spring as illustrated.
3. Tighten the screw.



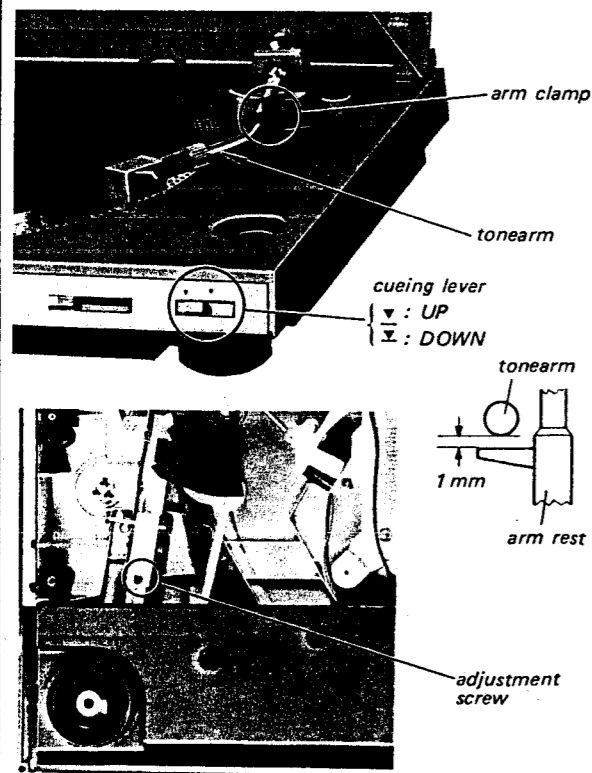
## 3-2. ELECTRICAL ADJUSTMENT

## Speed Detecting Head Position Adjustment



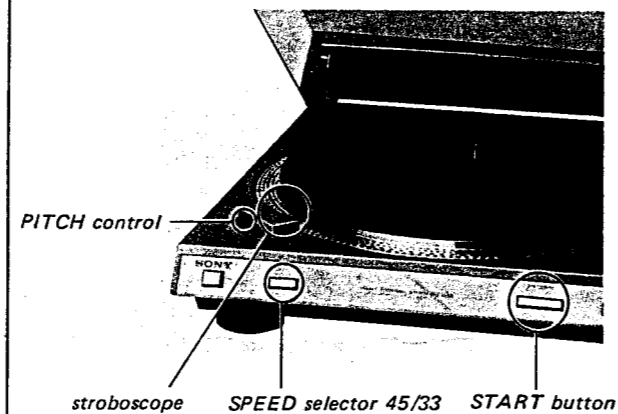
## Tonearm Height Adjustment

1. Release the tonearm from the clamp and place the tonearm on the arm rest.
2. Set the cueing lever to the up-position.
3. Adjust the screw so that the clearance between the tonearm and the arm rest is 1 mm.

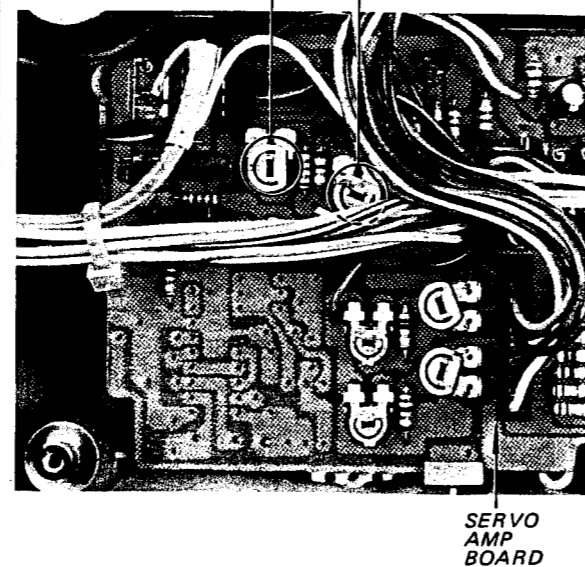


## Speed Adjustment

1. Set the PITCH control at center position and push the START button.
2. Set the SPEED selector to the 33 rpm position and adjust RV1 so that the stroboscope pattern seems to be stopped.
3. Set the SPEED selector to the 33 rpm position and adjust RV2 so that the stroboscope pattern seems to be stopped.

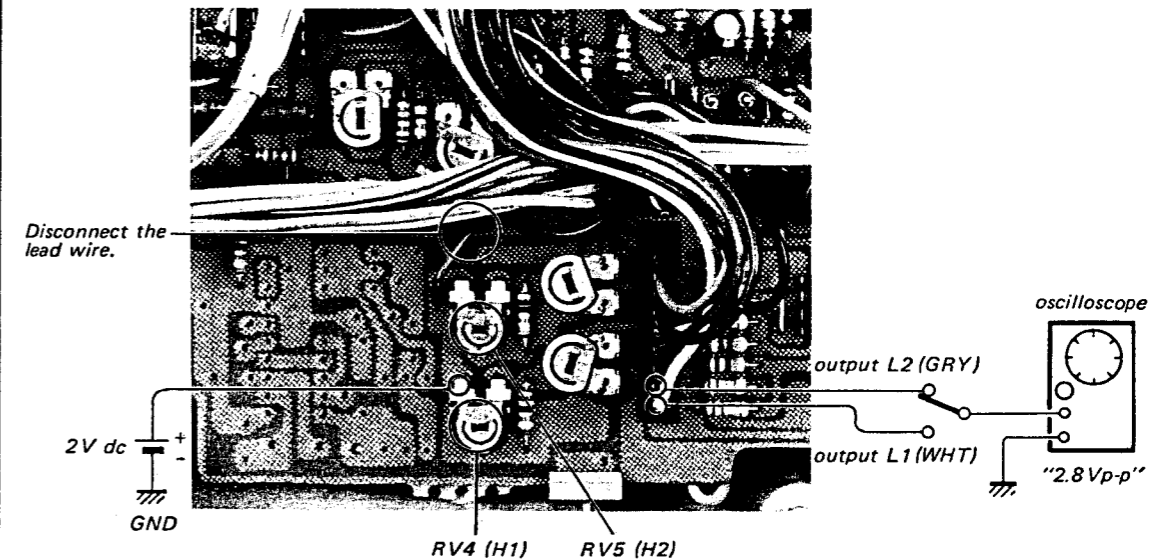


RV2 for 45 rpm ADJ      RV1 for 33 rpm ADJ



## Hall Device Gain Adjustment

1. Disconnect the lead wire and connect the regulated power supply as shown below.
2. Connect an oscilloscope to L1 and adjust RV4 to obtain 2.8 V peak to peak.
3. Likewise, adjust RV5 for L2.

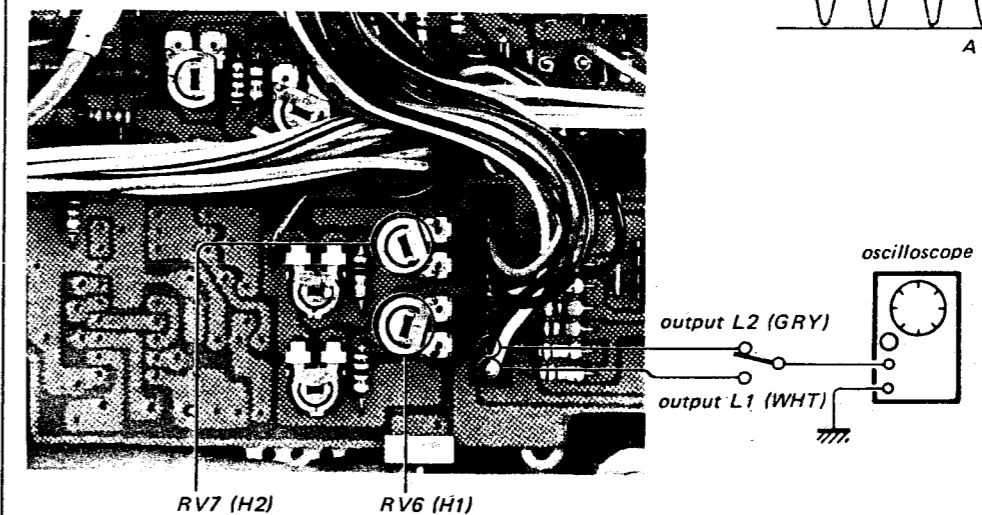
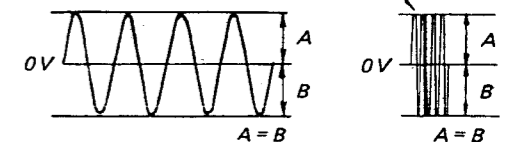


## Motor Amp Offset Adjustment

1. Connect an oscilloscope to L1 and adjust RV6 to observe the waveform on an oscilloscope as shown below.
2. Connect an oscilloscope to L2 and adjust RV7 to observe the waveform on an oscilloscope as shown below.

Waveform on Oscilloscope:

Note: Set the sweep time to longer for easy checking the waveform.

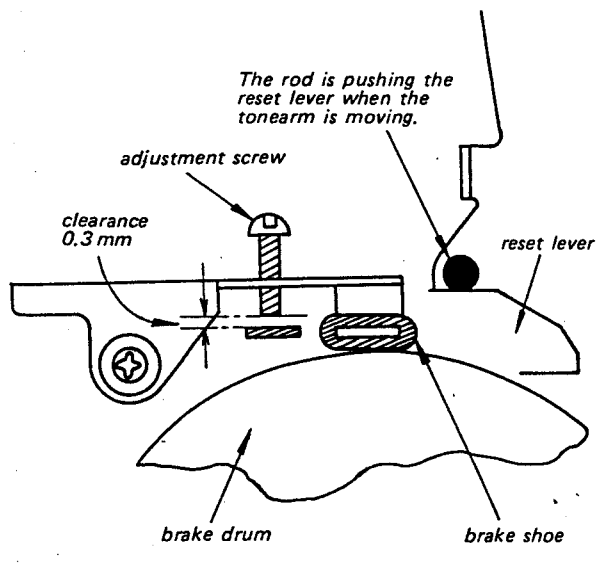


## SECTION 3 ADJUSTMENTS

### 3-1. MECHANICAL ADJUSTMENTS

#### Brake Adjustment

1. Turn the drive gear counterclockwise, and the tonearm moves inwards and the brake shoe touches the brake drum.
2. Adjust the screw so that the clearance is 0.3 mm as shown.

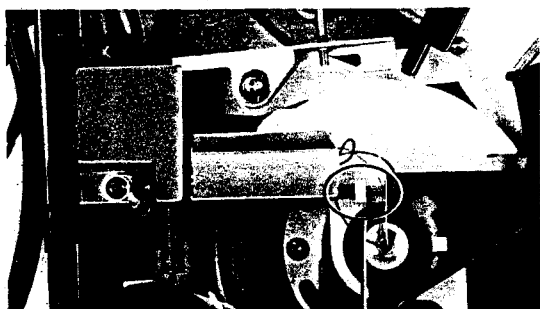


#### Auto Return Position Adjustment

1. Turn the turntable by hand, and the tonearm moves inwards.
2. Adjust the screw so that the tonearm returns at the position where the distance between the stylus and the spindle is 61–64 mm.

Return position	Adjustment screw
early	clockwise
later	counterclockwise

Play the test record (YFSC-16) and confirm that the tonearm returns at count of 4–11.



automatic return  
adjustment screw

#### Tonearm Drop-point Adjustment

1. Remove the rubber cap of the tonearm drop-point adjustment hole.
2. Set the record size selector lever to the 30 (12") position and make sure that the stylus gets down on the specified point of the test record.  
test record: YFSC-16

Record size selector lever position	Count of drop-point
30 (12")	4 to 16
25 (10")	6 to 24
17 ( 7")	7 to 25

3. If necessary, insert the screwdriver into the hole and adjust the drop-point by turning the adjustment screw.

To change the drop-point inward:

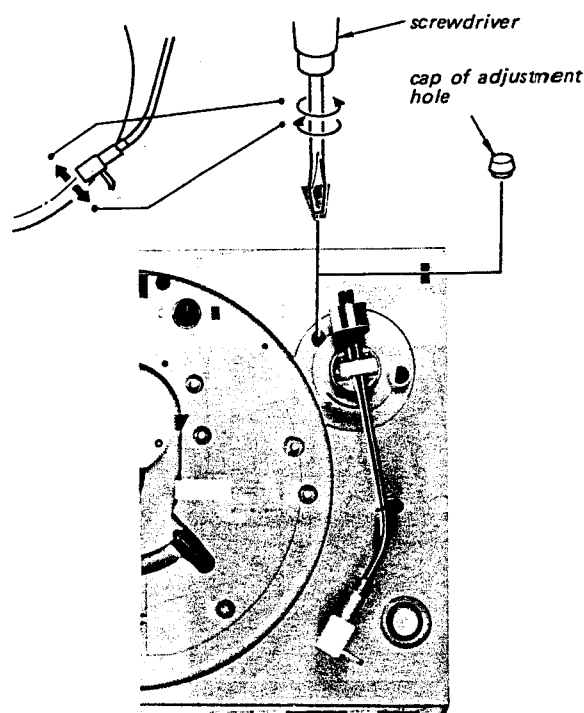
Turn the adjustment screw slightly counterclockwise.

To change the drop-point outward:

Turn the adjustment screw slightly clockwise.

4. Once it is properly adjusted with a 30 cm (12") record, the drop-point will be correct for 17 cm (7") and 25 cm (10") records as well.

**Note:** The tonearm drop-point is changed about 12 mm (½") by one turn of the adjustment screw.



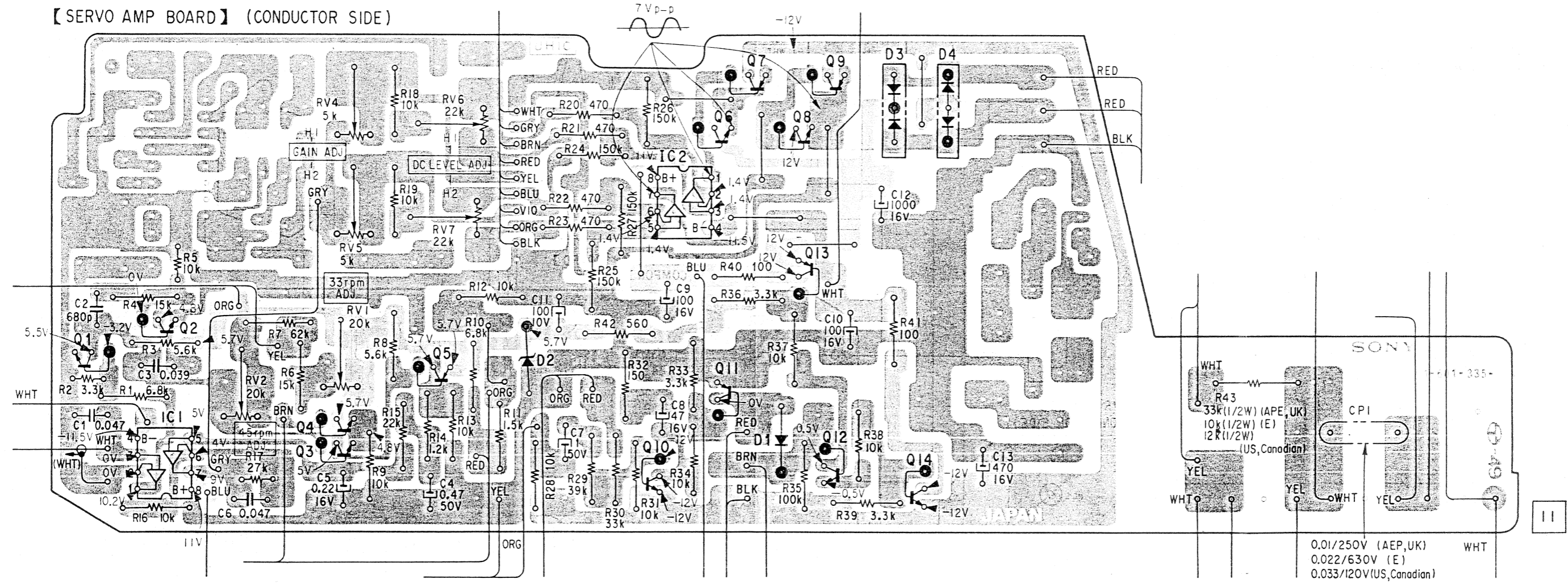
4-1. MOUNTING DIAGRAM

US, Canadian, UK, SCN Model

— Conductor Side —

		2				1		3		4	D
1	2	3	5	IC2		6	7	8	9	14	
	IC1	4		10	11	13	12				Q, IC

【SERVO AMP BOARD】 (CONDUCTOR SIDE)



4-2. MOUNTING DIAGRAM

— Component Side —

Replacement Semiconductors

For replacement, use semiconductors except in ( ).

Q1-4  
Q10,12,14 } : 2SC1364 (2SD637)

Q6,8: 2SD809 (2SD973)

Q5,13: 2SA1027R  
Q11: 2SA1027R (2SB642)

Q7,9: 2SB731 (2SB793)

D1: 1S1555

D3: S3VC40 (MI-151)

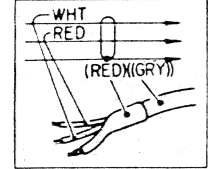
D2: EQB01-06

D4: S3VC40R (MI-151R)

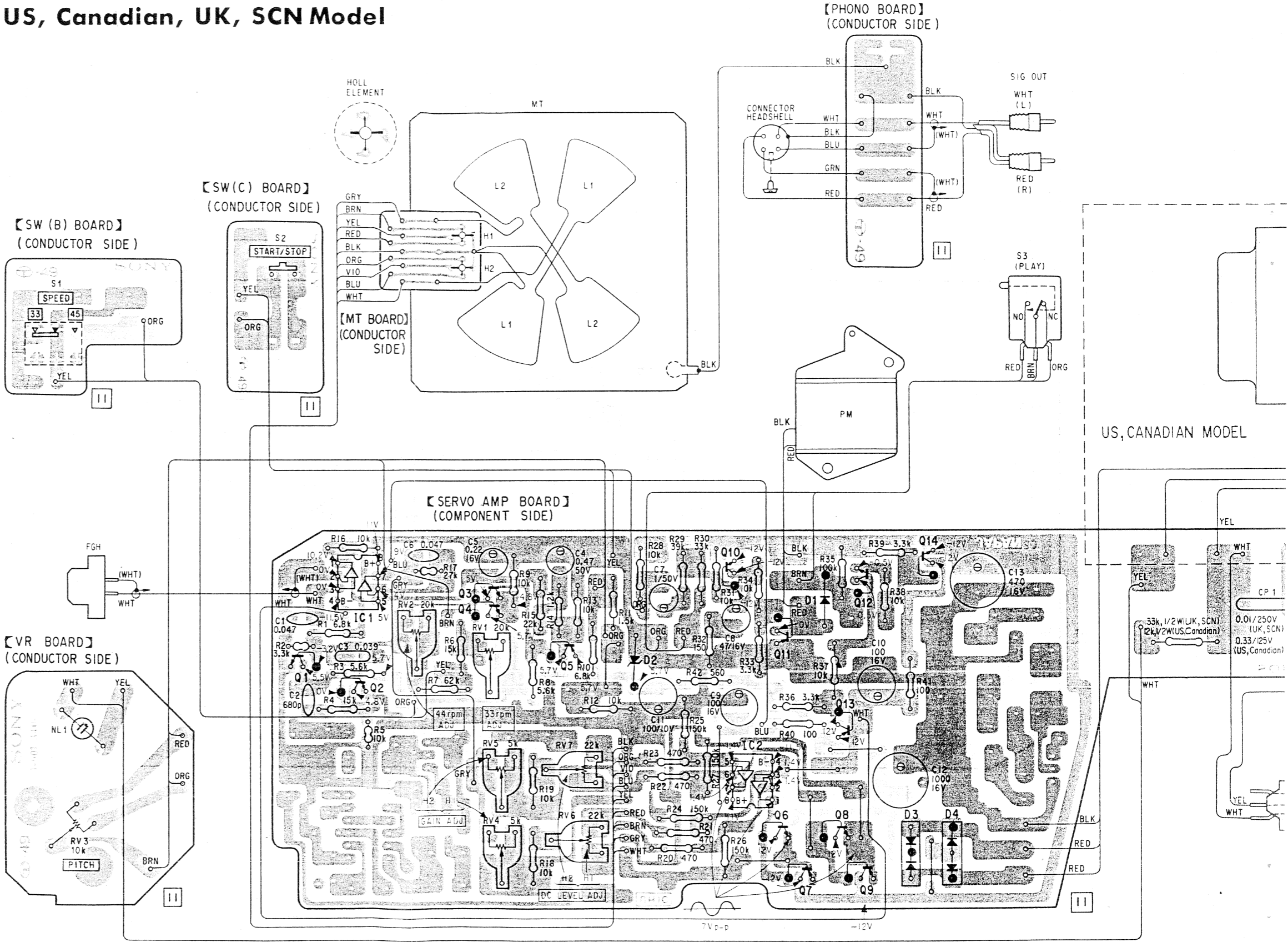
IC1,2:  $\mu$ PC4558C

H1,2: F-1409

- Note:
- : B+ pattern
  - : B- pattern
  - Color code of sleeving over the end of the jacket.



US, Canadian, UK, SCN Model



Q	1	IC1	3	5	10	11	12	14		
IC	2		4			IC2	6	7	8	9
D				2			1		3	4



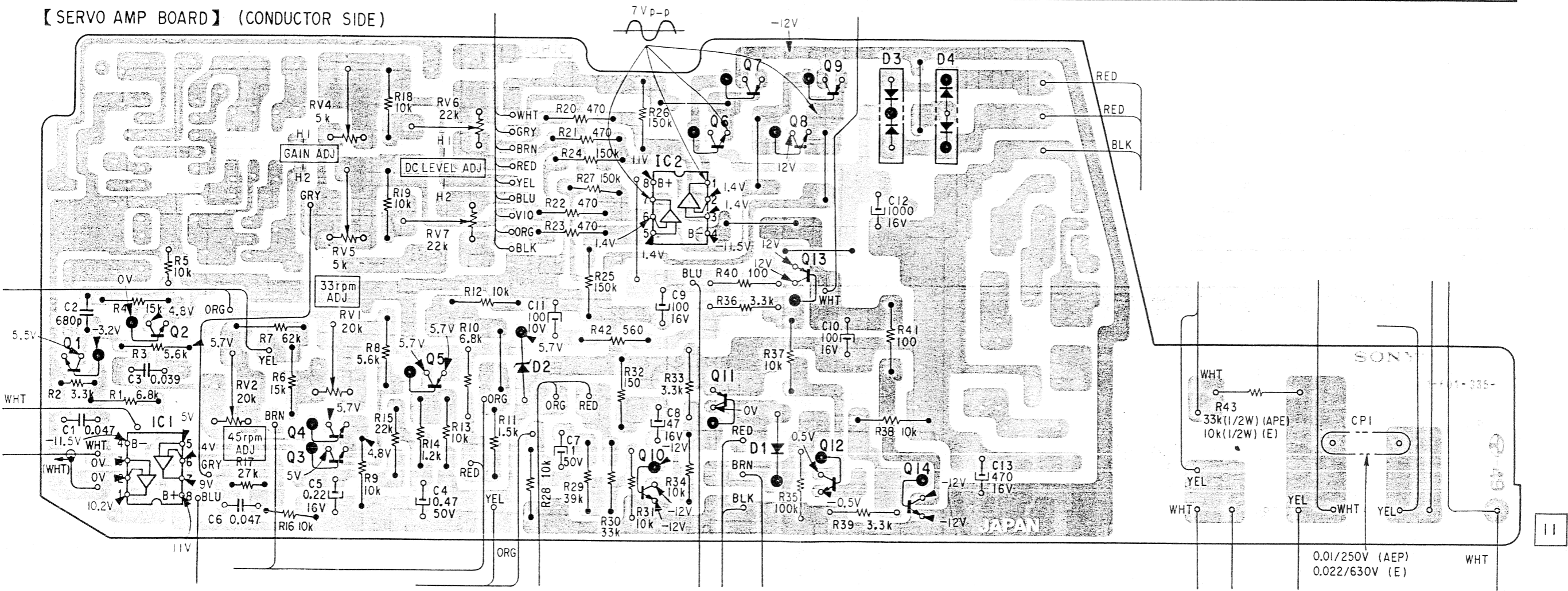
4-3. MOUNTING DIAGRAM

E, AEP Model

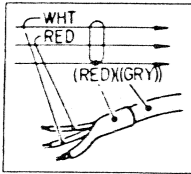
— Conductor Side —

		2		1		3		4		D
1	2 IC1	3 4	5	6 IC2	7 11	8 13	9 12	10 14	Q, IC	

【SERVO AMP BOARD】 (CONDUCTOR SIDE)



- Note
- : B+ pattern
  - : B- pattern
  - : MELF components.
  - : Color code of sleeving over the end of the jacket.



## 4-4. MOUNTING DIAGRAM

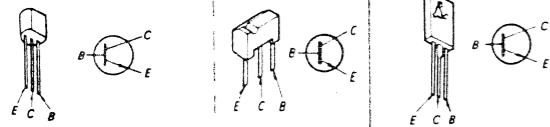
— Component Side —

## Replacement Semiconductors

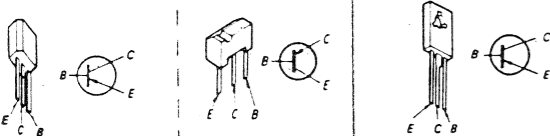
For replacement, use semiconductors except in ( ).

Q1-4  
Q10, 12, 14 } 2SC1364 (2SD637)

Q6, 8: 2SD809 (2SD973)

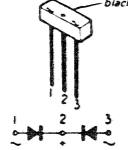
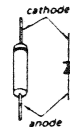
Q5, 13: 2SA1027R  
Q11: 2SA1027R (2SB642)

Q7, 9: 2SB731 (2SB793)



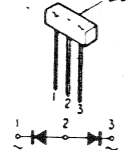
D1: 1S1555

D3: S3VC40 (MI-151)

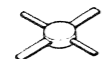
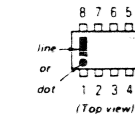


D2: EQB01-06

D4: S3VC40R (MI-151R)

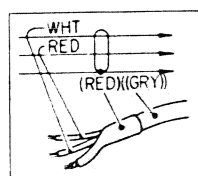
IC1, 2:  $\mu$ PC4558C

H1, 2: F-1409

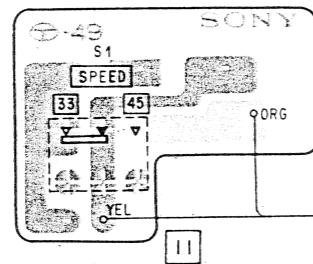
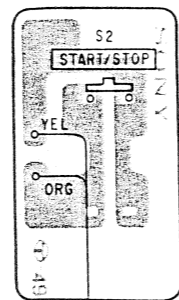
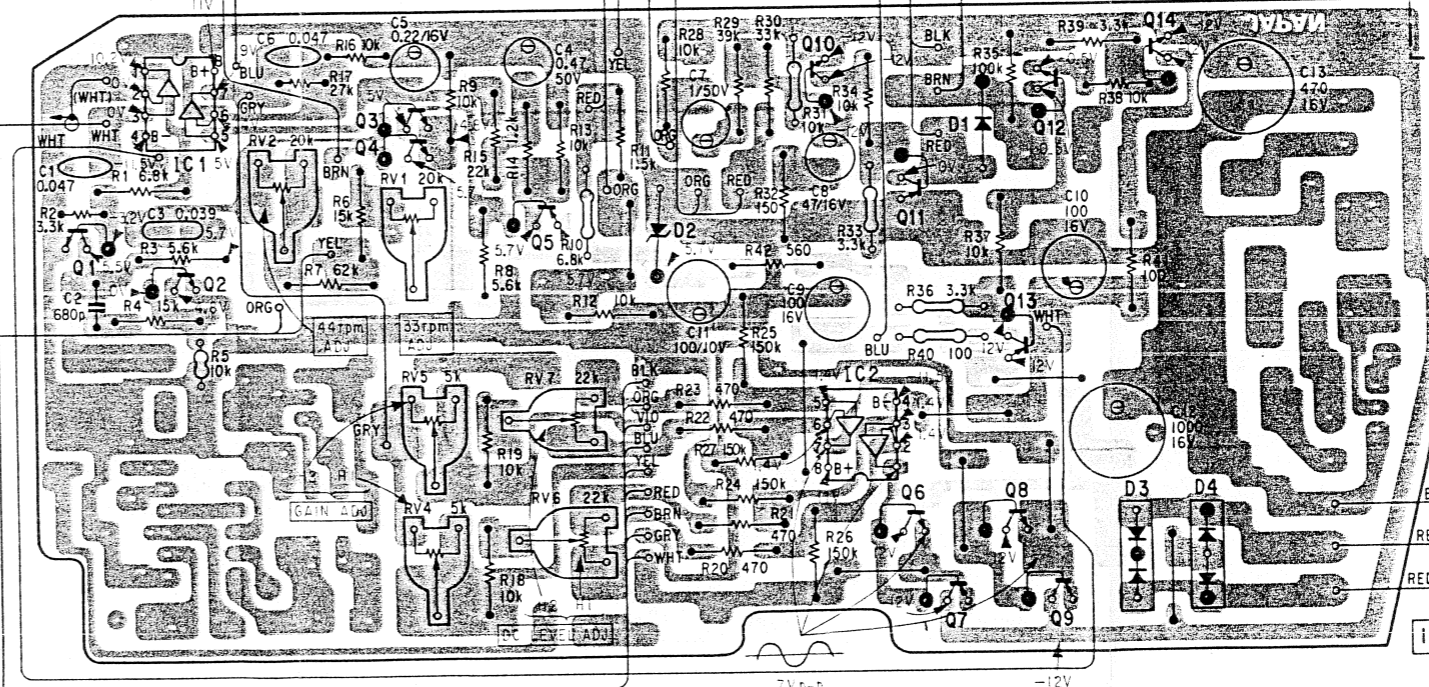
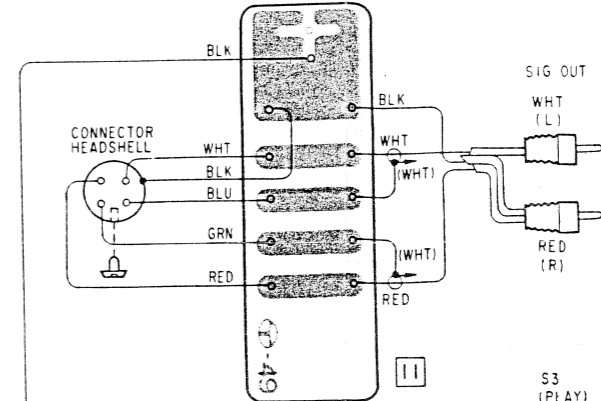
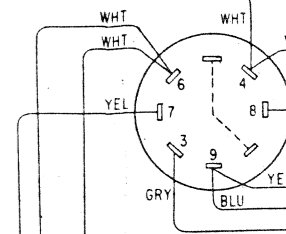


## Note

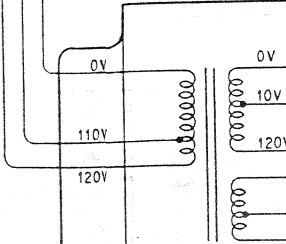
- : B+ pattern
- : B- pattern
- : MELF components
- : Color code of sleeving over the end of the jacket.



## E, AEP Model

【SW (B) BOARD】  
(CONDUCTOR SIDE)【SW (C) BOARD】  
(CONDUCTOR SIDE)【MT BOARD】  
(CONDUCTOR SIDE)【SERVO AMP BOARD】  
(COMPONENT SIDE)【PHONO BOARD】  
(CONDUCTOR SIDE)VOLTAGE SELECTOR  
(V.S.)

PT



0V

10V

120V

0V

10V

120V

0V

10V

120V

0V

10V

120V

0V

10V

120V

0V

10V

120V

0V

10V

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120V

0V

10V

120V

0V

10V

120V

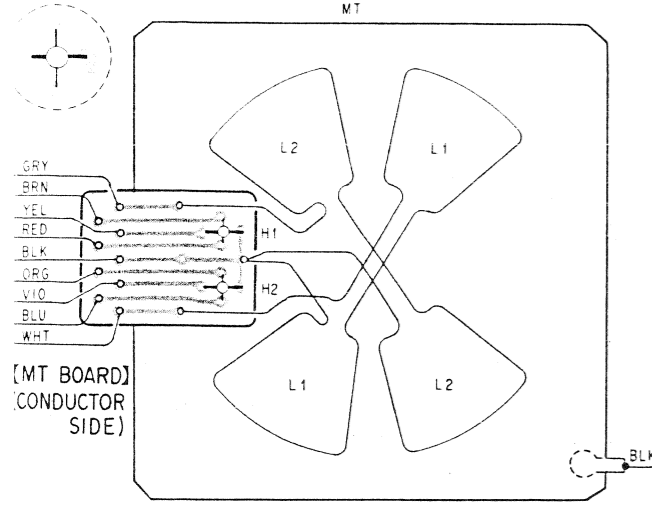
0V

10V

120V

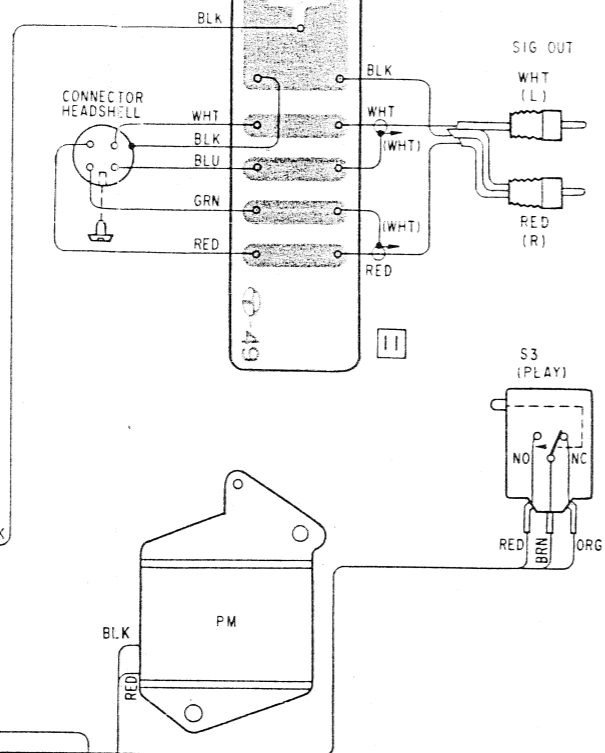
Q	1	IC1	3	5	10	11	13	12	14
IC	2	4	6	7	8	9			
D	2	3	4						

HOLL  
ELEMENT

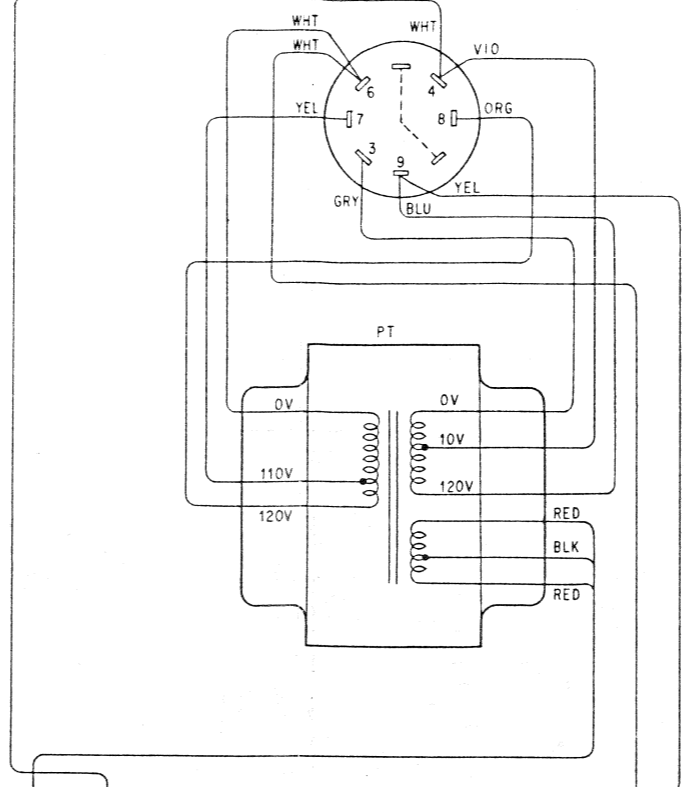


【MT BOARD】  
(CONDUCTOR  
SIDE)

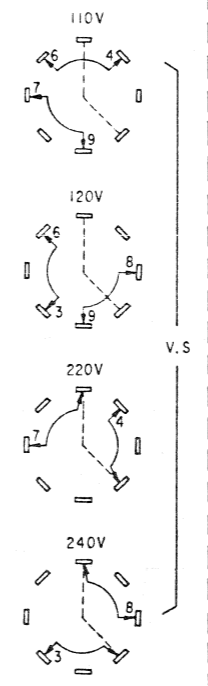
【PHONO BOARD】  
(CONDUCTOR SIDE)



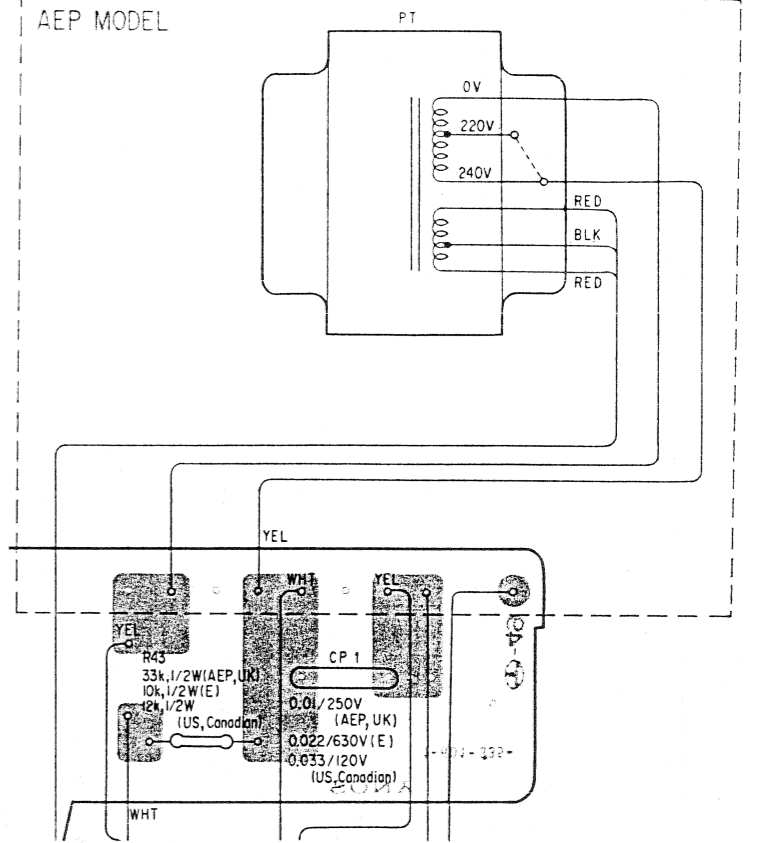
VOLTAGE SELECTOR  
(V.S.)



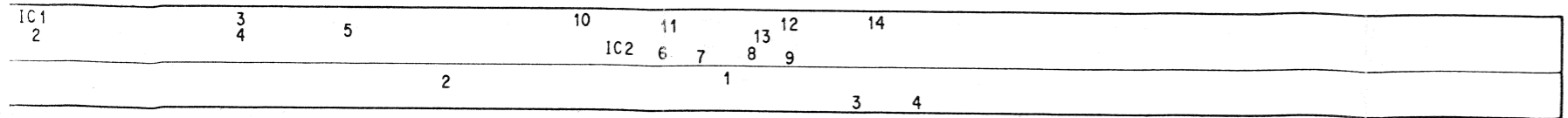
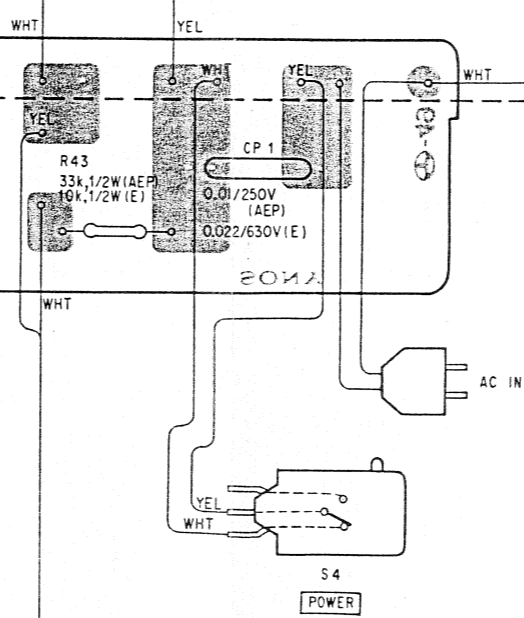
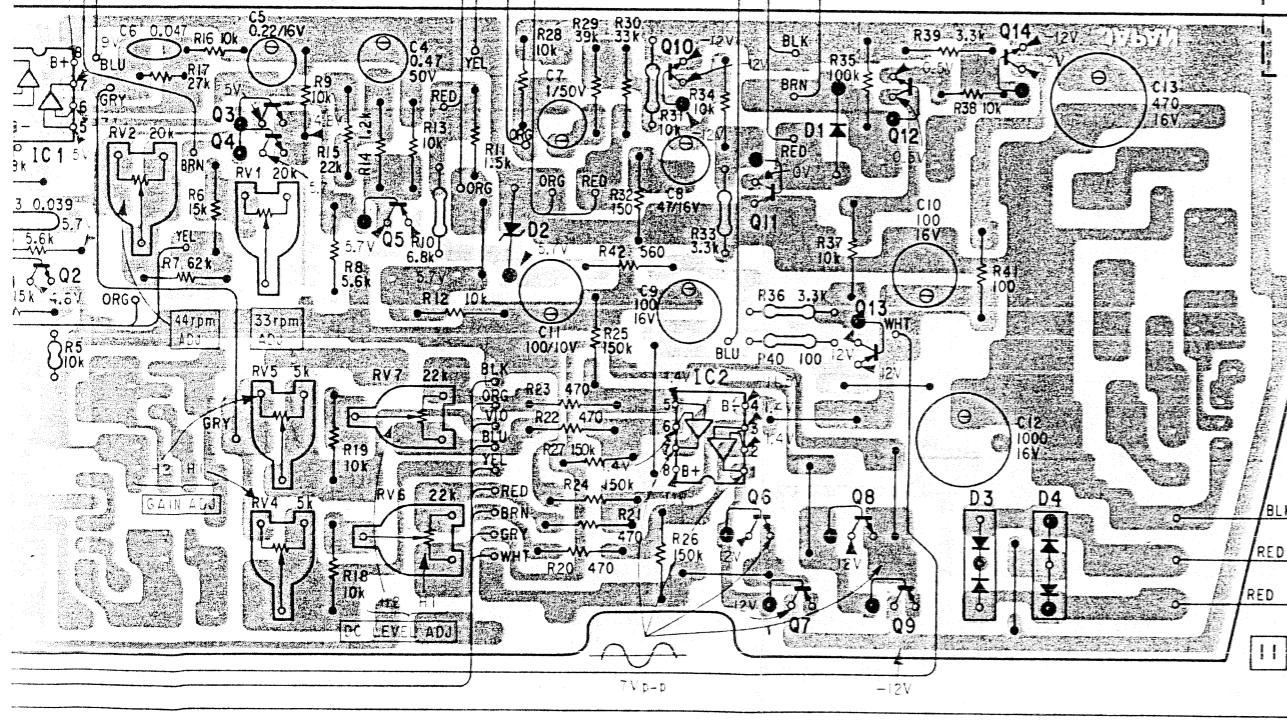
E MODEL

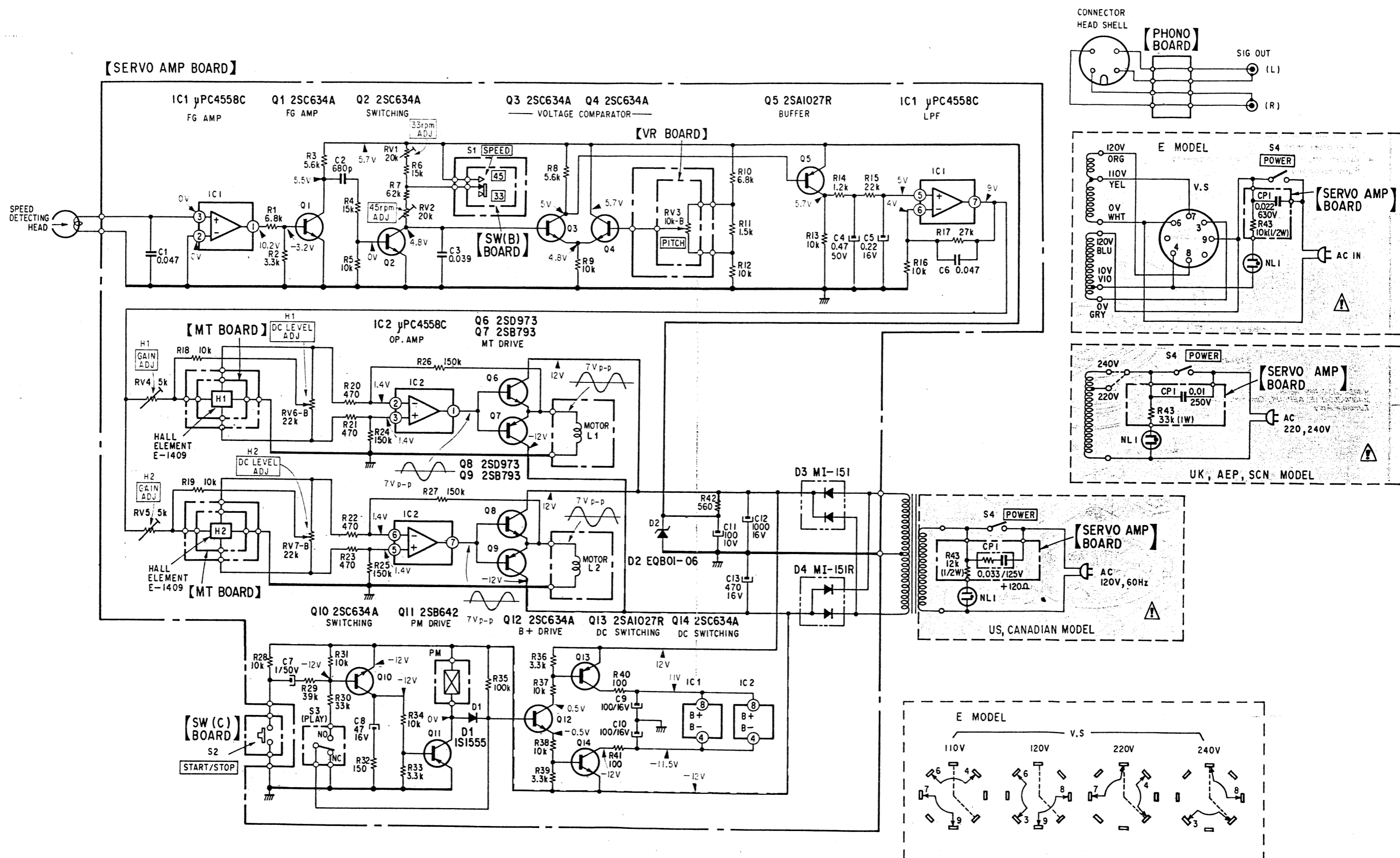


AEP MODEL



【SERVO AMP BOARD】  
(COMPONENT SIDE)





Note: Les composants identifiés par un tramé et une marque  $\Delta$  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

**Note:**

- All capacitors are in  $\mu$ F unless otherwise noted. pF:  $\mu$ F 50WV or less are not indicated except for electrolytics.
- All resistors are in ohms,  $\frac{1}{4}$ W unless otherwise noted. k $\Omega$ : 1000 $\Omega$ ; M $\Omega$ : 1000 k $\Omega$
- Voltage variations may be noted due to normal production tolerances.
- Readings are taken under no-signal 33 rpm X'TAL LOCK conditions with a VOM (20 k $\Omega$ /V).

- Transistor base-emitter voltages are measured on the 2.5V range.
- —: B+ bus.
- ---: B- bus.
- $\square$ : panel designation.
- $\square$ : adjustment for repair.

Note: The components identified by shading and mark  $\Delta$  are critical for safety. Replace only with part number specified.

SECTION 5

EXPLODED VIEWS

A

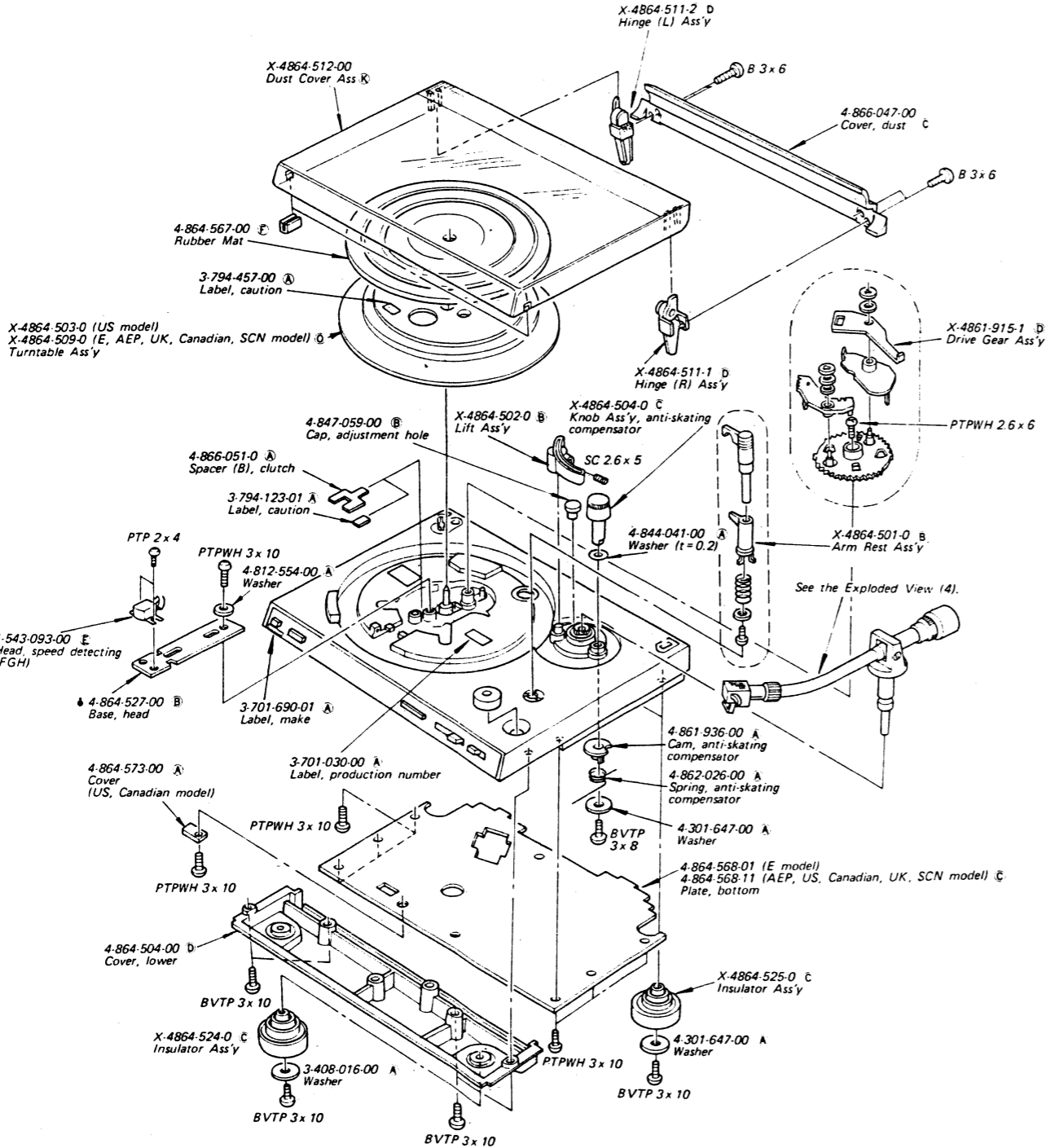
B

C

D

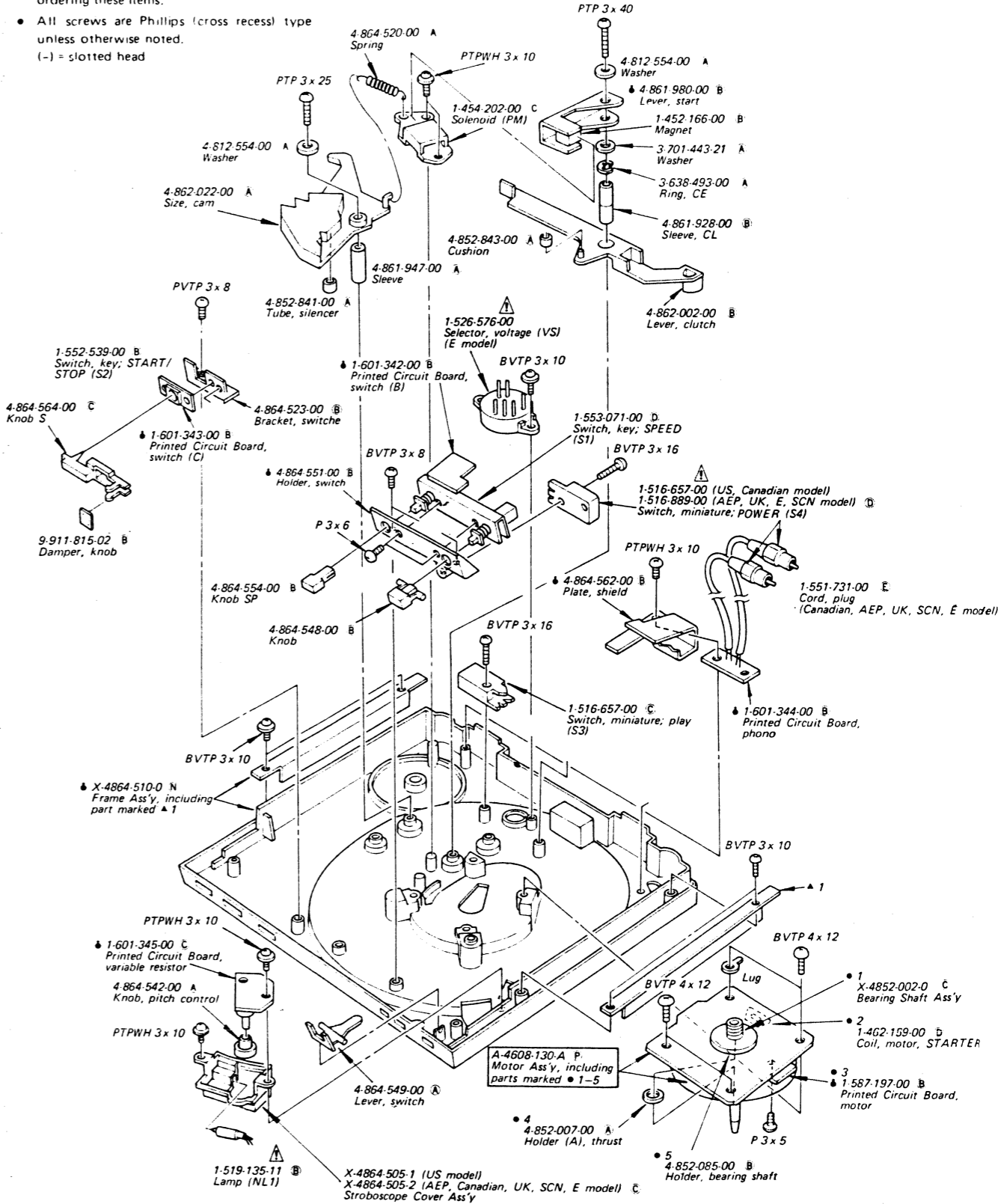
(1)

- Note:
- Items marked "▲" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
  - All screws are Phillips (cross recess) type unless otherwise noted.  
(-) = slotted head
  - Circled letters (A to Z) are applicable to European models only.



(2)

- Note:
- Items marked "▲" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
  - All screws are Phillips (cross recess) type unless otherwise noted.  
(-) = slotted head
  - Circled letters (A to Z) are applicable to European models only.



Note: Les composants identifiés par un tramé et une marque ▲ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Note: The components identified by shading and mark ▲ are critical for safety. Replace only with part number specified.

A

B

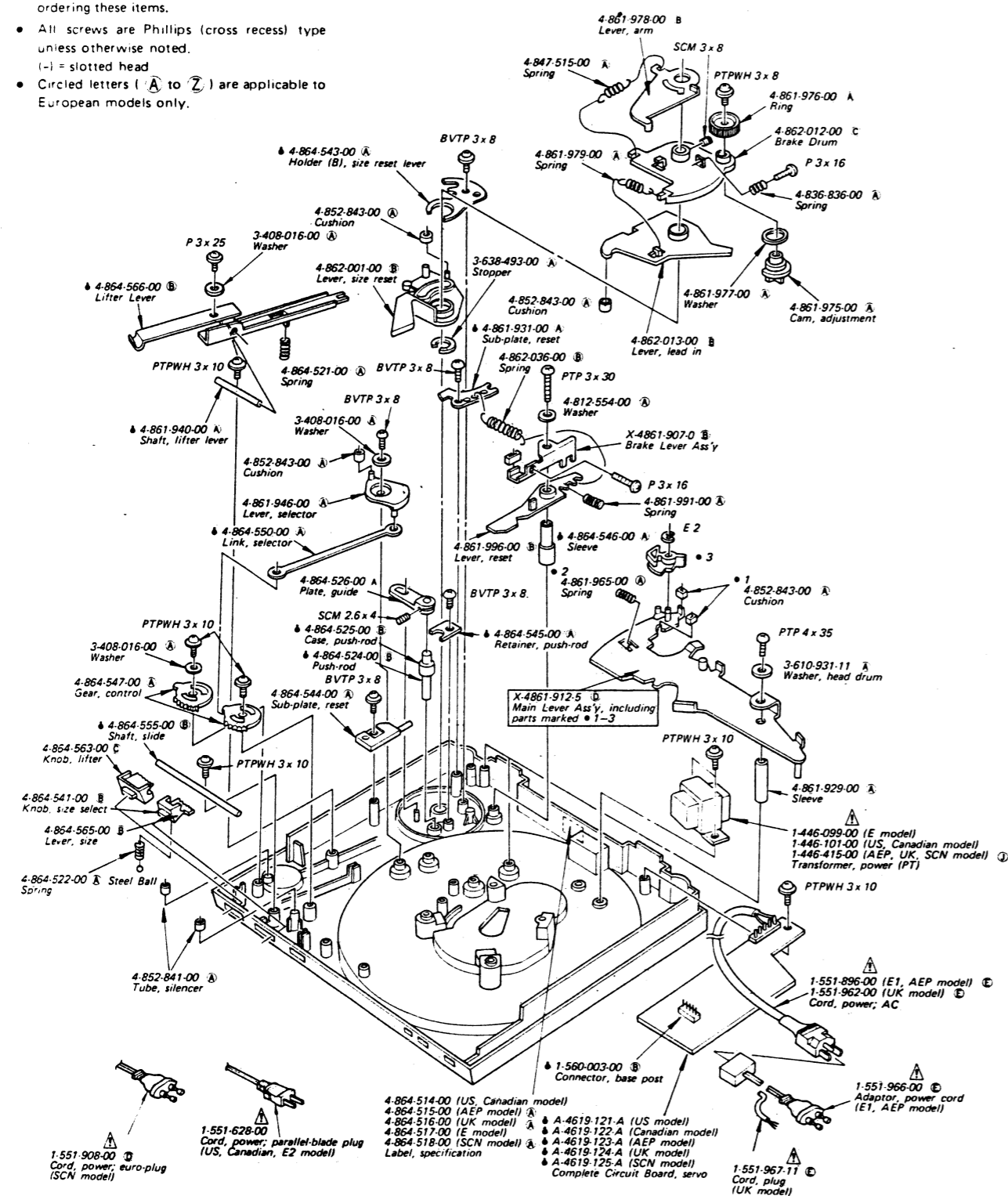
C

D

(3)

Note:

- Items marked "▲" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All screws are Phillips (cross recess) type unless otherwise noted.
- (-) = slotted head
- Circled letters (A to Z) are applicable to European models only.



Note: The components identified by shading and mark ▲ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par un trame et une marque ▲ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

A

B

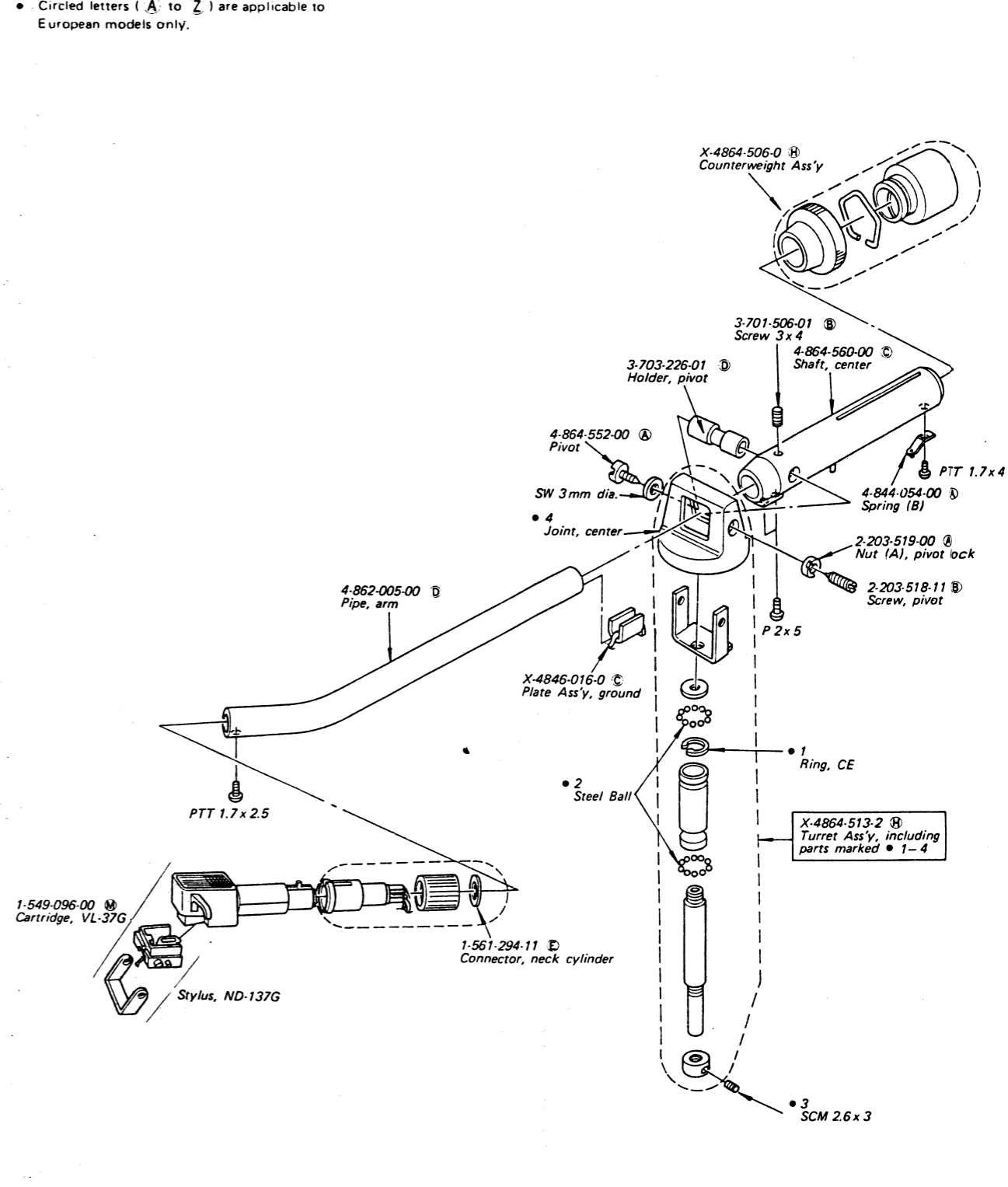
C

D

(4)

Note:

- All screws are Phillips (cross recess) type unless otherwise noted.
- (-) = slotted head
- Circled letters (A to Z) are applicable to European models only.



SECTION 6

ELECTRICAL PARTS LIST

Note: Circled letters ( A to Z ) are applicable to European models only.

Ref. No. Part No. Description

COMPLETE CIRCUIT BOARDS

● A-4619-121-0	Servo Amp (US model)
● A-4619-122-0	Servo Amp (Canadian model)
● A-4619-123-0	Servo Amp (AEP model)
● A-4619-124-0	Servo Amp (UK model)
● A-4619-125-0	Servo Amp (SCN model)
● A-4619-126-0	Servo Amp (E model)

PRINTED CIRCUIT BOARD

● 1-587-197-00	Motor
● 1-601-342-00	Switch (B)
● 1-601-344-00	Phono
● 1-601-345-00	Variable Resistor

SEMICONDUCTORS

Transistors

⇒Q1-4	8-729-663-47	Ⓑ	2SC1364
Q5	8-729-612-77	Ⓑ	2SA1027R
⇒Q6	8-729-180-93	Ⓑ	2SD809
⇒Q7	7-729-173-13	Ⓑ	2SB731
⇒Q8	8-729-180-93	Ⓑ	2SD809
⇒Q9	8-729-173-13	Ⓑ	2SB731
⇒Q10	8-726-388-00	Ⓑ	2SC1364
⇒Q11	8-729-612-77	Ⓑ	2SA1027R
⇒Q12	8-726-388-00	Ⓑ	2SC1364
Q13	8-729-612-77	Ⓑ	2SA1027R
⇒Q14	8-726-388-00	Ⓑ	2SC1364

ICs

IC1,2	8-759-145-58	Ⓓ	μPC4558C
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Diodes

D1	8-719-815-55	Ⓑ	1S1555
D2	8-719-931-06	Ⓑ	EQB01-06
⇒D3	8-719-500-34	Ⓒ	S3VC40
⇒D4	8-719-501-34	Ⓒ	S3VC40R

Items marked ● are not stocked because they are seldom required for routine service. Some delay should be anticipated when ordering these items.

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Ref. No. Part No. Description

Hall Devices

H1,2	8-719-814-09	Ⓓ	F-1409
------	--------------	---	--------

TRANSFORMERS

PT	⚠ 1-446-099-00	Power (E model)
PT	⚠ 1-446-101-00	Power (US, Canadian model)
PT	⚠ 1-446-415-00	Ⓙ Power (AEP, UK, SCN model)

CAPACITORS

All capacitors are in μF and ceramic unless otherwise noted.  
50WV or less are not indicated except for electrolytics. p: μF, elect: electrolytic

C1	1-101-006-00	Ⓑ	0.047	
C2	1-102-116-00	Ⓐ	680p	
C3	1-108-360-00	Ⓑ	0.039	mylar
C4	1-123-351-00	Ⓑ	0.47	50V elect
C5	1-131-453-00	Ⓑ	0.22	16V tantalum
C6	1-101-006-00	Ⓐ	0.047	
C7	1-123-352-00	Ⓑ	1	50V elect
C8	1-123-319-00	Ⓑ	47	16V elect
C9,10	1-123-320-00	Ⓑ	100	16V elect
C11	1-123-307-00	Ⓑ	100	10V elect
C12	1-123-324-00	Ⓑ	1000	16V elect
C13	1-123-323-00	Ⓑ	470	16V elect

RESISTORS

All resistors are in ohms. Common ¼W carbon resistors are omitted.  
Refer to the list on page 6 for their part numbers.  
Check schematic diagram for values.

R43	⚠ 1-213-161-00	Ⓐ	33k	1W metal oxide (AEP, UK, SCN model)
R43	⚠ 1-244-897-00		10k	½W (E model)
R43	⚠ 1-244-899-00		12k	½W (US, Canadian model)

⇒: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.

Note: Les composants identifiés par un tramé et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No. Part No. Description

RV1,2	1-226-237-00	Ⓑ	22 k, variable
RV3	1-226-196-00	Ⓑ	10 k-B, adjustable
RV4,5	1-226-235-00	Ⓑ	5 k, variable
RV6,7	1-226-237-00	Ⓑ	22 k-B, adjustable

SWITCHES

S1	1-553-071-00	Ⓓ	Key, SPEED
S2	1-552-539-00	Ⓑ	Key, START/STOP
S3	1-516-657-00	Ⓒ	Miniature, play
S4	⚠ 1-516-657-00		Miniature, POWER (US, Canadian model)
S4	⚠ 1-516-889-00	Ⓓ	Miniature, POWER (AEP, UK, SCN, E model)

MISCELLANEOUS

CP1	⚠ 1-129-718-00	Capacitor	0.022	630V	film (E model)
CP1	⚠ 1-130-196-00	Ⓓ Capacitor	0.01	250V	film (AEP, UK, SCN model)
CP1	⚠ 1-231-326-11	Encapsulated Component			(US model)
CP1	⚠ 1-231-341-00	Encapsulated Component			(Canadian model)
FGH	1-543-093-00	Ⓔ	Head, speed detecting		
NL1	⚠ 1-519-135-11	Ⓑ	Lamp		
PM	1-454-202-00	Ⓒ	Solenoid		
VS	⚠ 1-526-576-00		Voltage Selector (E model)		

A-4608-130-A Ⓒ Motor Ass'y, TMD-35

1-452-166-00	Ⓑ	Magnet
1-462-159-00	Ⓓ	Coil, motor; STARTER
● 1-535-115-00	Ⓐ	Terminal with Base, 2p
● 1-535-116-00	Ⓐ	Terminal with Base, 3p
● 1-535-121-00		Terminal with Base, 8p (US, Canadian model)

● 1-535-123-00	Ⓐ	Terminal with Base, 10p (AEP, UK, SCN, E model)
⚠ 1-551-628-00		Cord, power; parallel-blade plug (US, Canadian, E2 model)

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note: Circled letters ( A to Z ) are applicable to European models only.

Ref. No. Part No. Description

1-551-731-00	Ⓔ	Cord, plug (Canadian, AEP, UK, SCN, E model)
1-551-835-21		Cord, plug (US model)
⚠ 1-551-896-00	Ⓓ	Cord, power; 3p (AEP, E1 model)
⚠ 1-551-908-00	Ⓓ	Cord, power; euro-plug (SCN model)
⚠ 1-551-962-00	Ⓔ	Cord, power; 3p (UK model)
⚠ 1-551-966-00	Ⓔ	Adaptor, power cord (E1, AEP model)
⚠ 1-551-967-00	Ⓔ	Cord, power (UK model)
● 1-560-003-00	Ⓑ	Connector, base post
1-561-294-11	Ⓔ	Connector, neckcylinder
1-601-344-00	Ⓑ	Phono Board

ACCESSORIES AND PACKING MATERIALS

Part No.	Description
1-549-096-00	Ⓜ Cartridge, VL-37G
3-701-613-00	Ⓐ Bag, plastic
3-701-616-00	Ⓐ Bag, plastic
3-701-630-00	Ⓐ Bag, plastic
3-701-634-00	Ⓑ Bag, plastic
3-701-730-00	Ⓑ Bag, plastic
3-701-806-00	Ⓐ 45 rpm Adapter
3-703-106-00	Label, distination (E2 model)
3-703-157-01	Label, distination (US model)
3-770-988-11	Ⓓ Manual, instruction (UK, AEP, SCN, E model)
3-770-988-21	Manual, instruction (US, Canadian model)
3-794-123-11	Ⓐ Label, caution
3-794-552-21	Card, customer (US model)
3-794-574-31	Manual, instruction; french (Canadian model)
4-858-407-00	Ⓑ Adjustor, DP Stylus, DN-137G

Items marked ● are not stocked because they are seldom required for routine service. Some delay should be anticipated when ordering these items.

Note: Les composants identifiés par un tramé et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Sony Corporation

© 1979

9-958-701-01

— 30 —

79106121-1  
Printed in Japan


# STEREO TURNTABLE SYSTEM

# PS-333

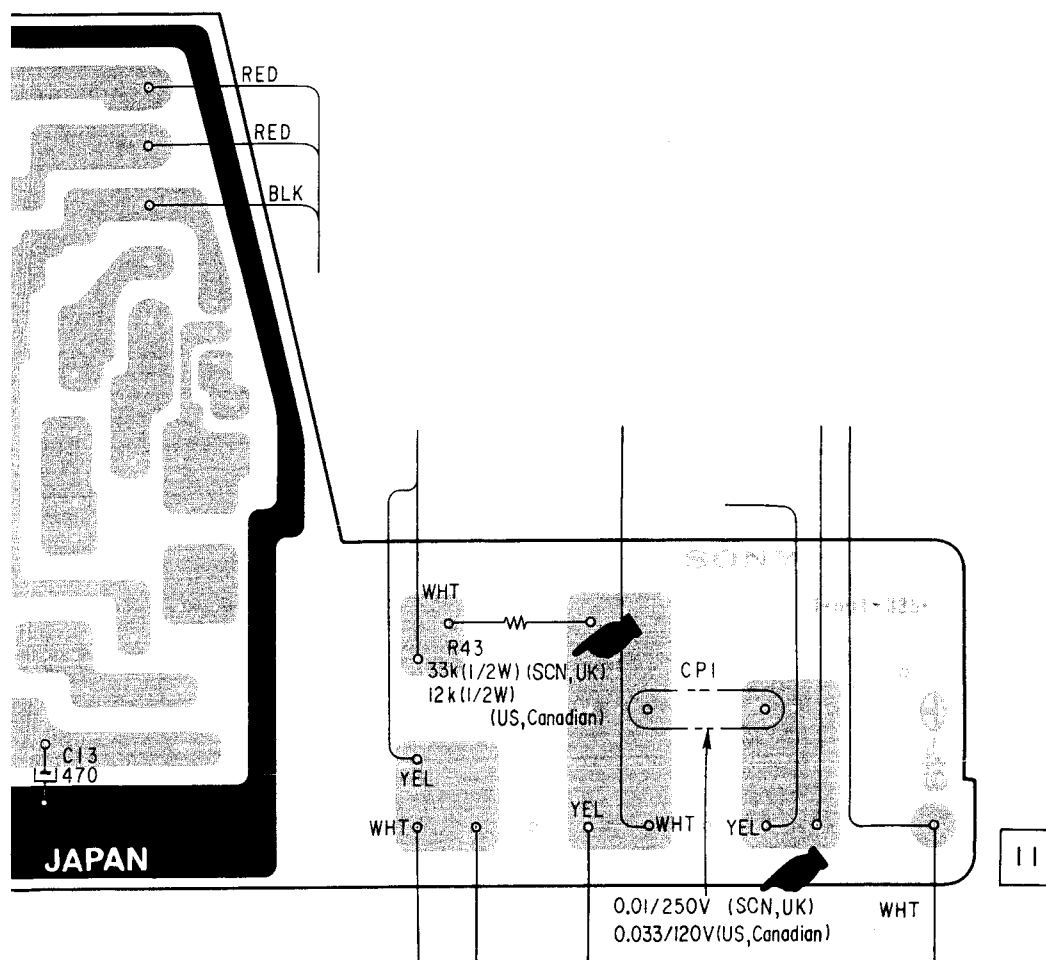
## CORRECTION

*US Model*  
*AEP Model*  
*E Model*  
*SCN Model*  
*Canadian Model*  
*UK Model*

No. 1  
September, 1979

 : Corrected portions.

— Page 13 —



**SONY**  
SERVICE MANUAL



# SONY®

## サービスガイド

1979年9月 発売

ステレオ ターンテーブル システム

# PS-333

### 概 略 仕 様

電 源 AC 100V、50/60Hz  
消費電力 6W  
大きさ 430×110×365mm (幅/高さ/奥行)  
最大突起部を含む  
重 さ 約4.7kg

### ターンテーブル部

ターンテーブル 直径32.4cm、アルミダイキャスト  
モーター・モーター 薄型リニアBSL (ブラシレス & スロットレス)  
DCサーボモーター  
駆動方式 ダイレクトドライブ  
回転数 33  $\frac{1}{3}$ 、45rpm  
速度調整範囲  $\pm 6\%$   
ワウ・フラッター 0.03%以下 WRMS  
S/N 70dB以上 (DIN-B)  
オートマチック機構 リードイン、リジェクト、リターン

### トーンアーム部

タイプ スタティックバランス型  
ユニバーサルトーンアーム  
有効長 216.5mm  
全 長 290mm  
オーバーハング 16.5mm  
トラッキングエラー  $+3^\circ \sim -1^\circ$   
針圧調整範囲 0~3g  
使用可能カートリッジ 11.5~19g  
シェル合計重量 範囲

### カートリッジ VL-37G

タイプ MM型  
周波 周波数特性 10Hz~20kHz  
チャンネルセパレーション 23dB以上 (1kHz)  
出力電圧 3mV (1kHz、3.54cm/s、45°)  
針 圧 1.5~2.5g (最適針圧 2g)  
交換針 ND-137G  
重 さ 13g (シェル含む)

### 【外観写真】



・外観名称は2ページ参照。

### 【概 要】

- ・薄型リニアBSL (ブラシレス&スロットレス) モーター採用。
- ・回転速度の検出にマグネディスクサーボ方式を使用。
- ・操作スイッチ類はすべて前面配置。

### 【海外では使用できません】

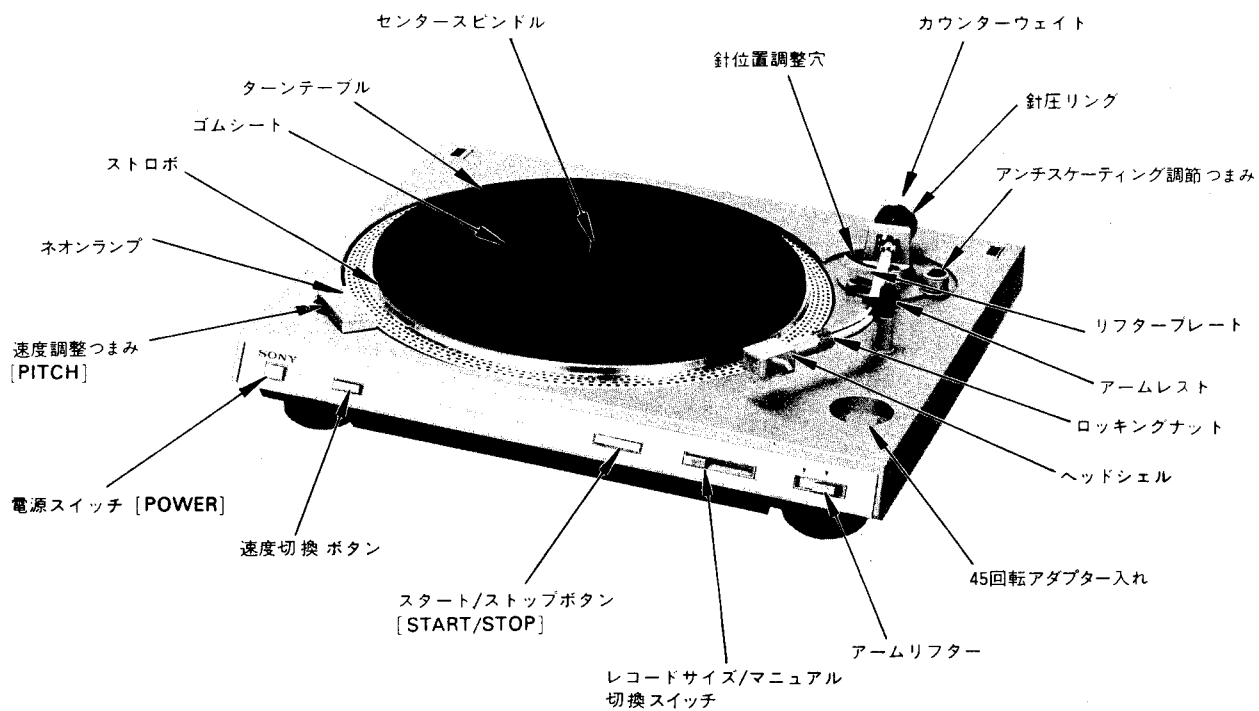
本機は、電気用品取締法 (安全規格) に基づいて、日本国内用につくられております。海外向けの変更は、製品の安全規格が日本と異なるためできません。

### 【電源周波数の切換えについて】

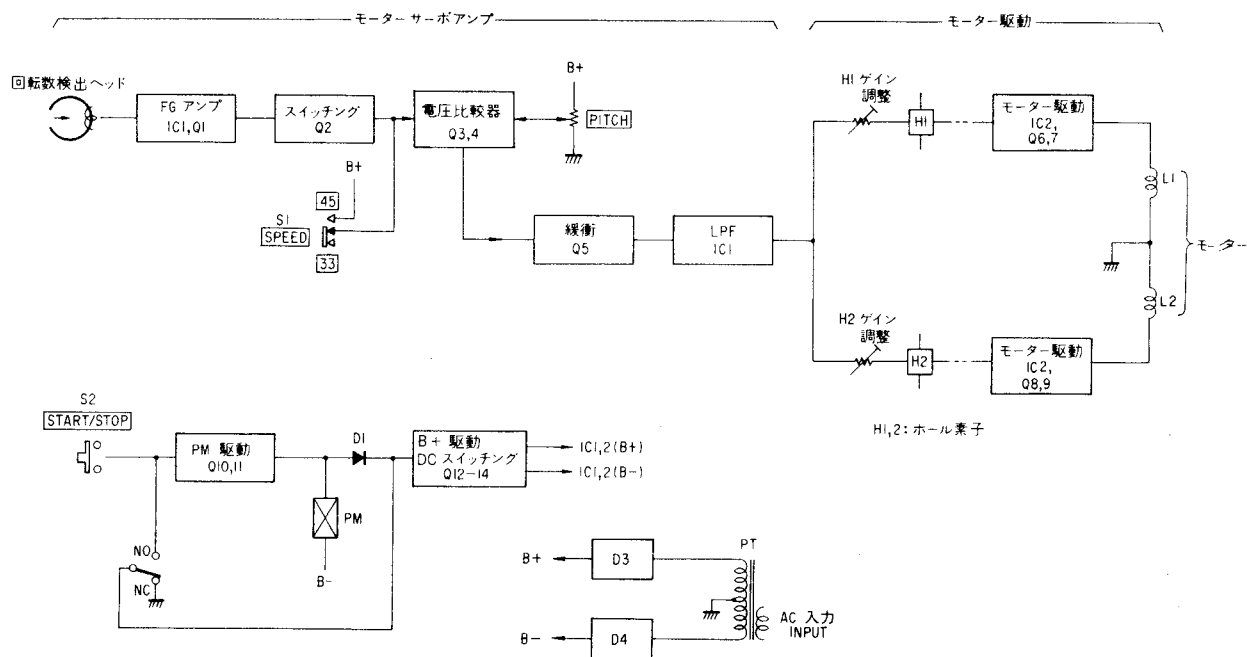
本機は、DCモーターを使用しているため、電源周波数の切換えは不要です。

安全・性能維持のため、必ず指定の部品をご使用下さい。

## 【外観名称】



## 【ブロックダイアグラム】

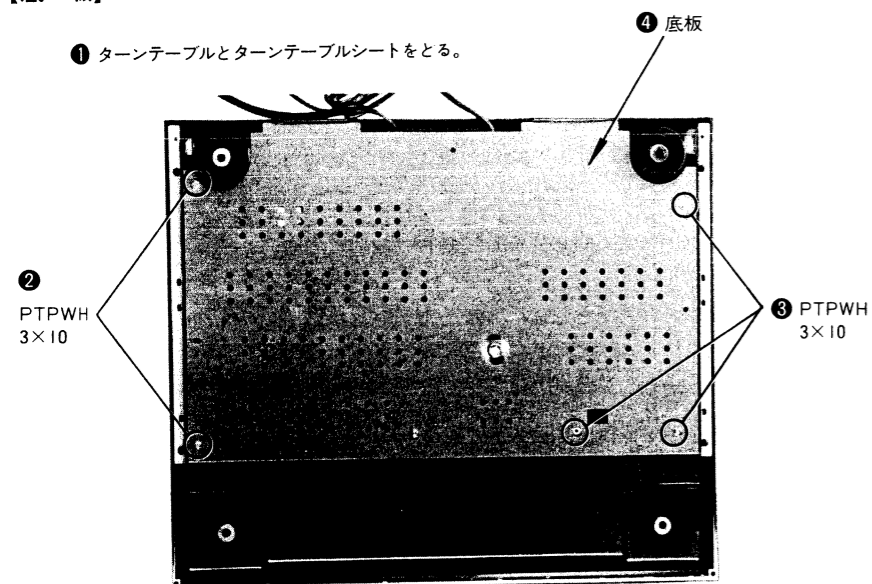


## 各部の外し方

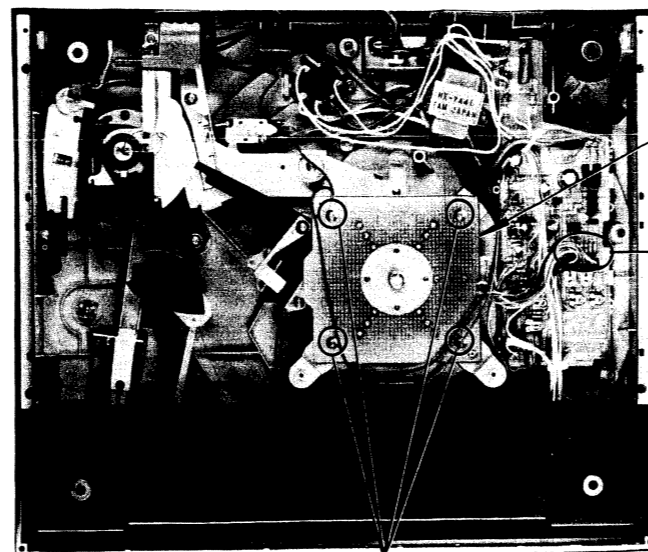
・図中に①など番号のあるものは、その番号順に外す。

### 【底板】

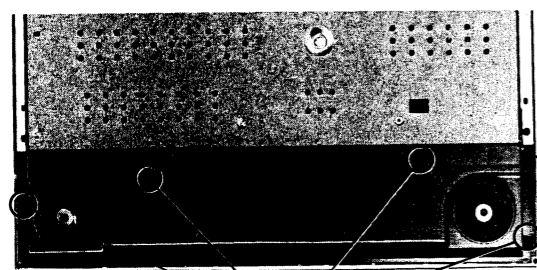
① ターンテーブルとターンテーブルシートをとる。



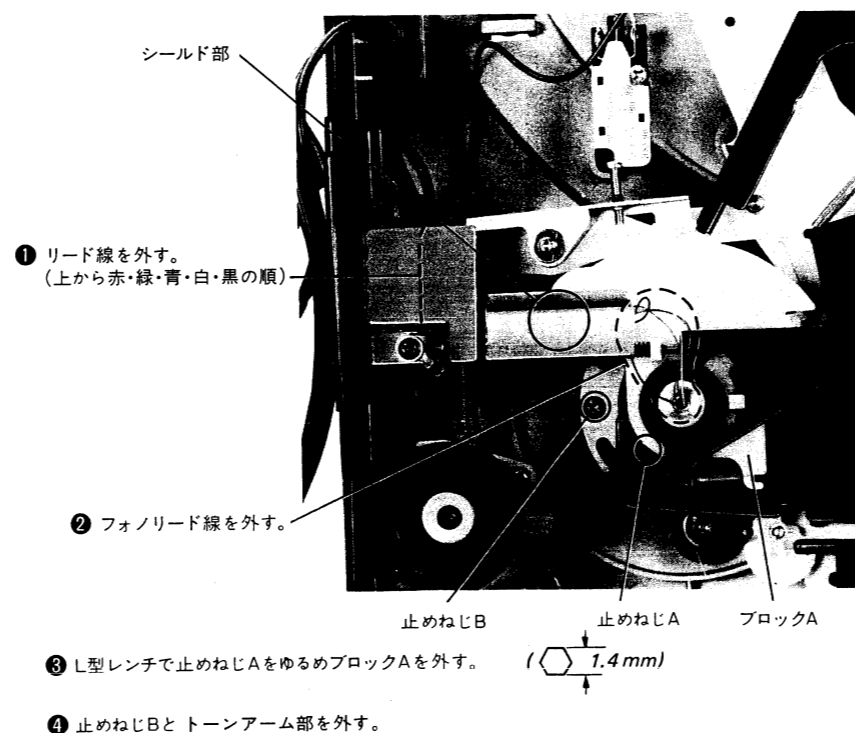
### 【モーター】



### 【カバー(下)】

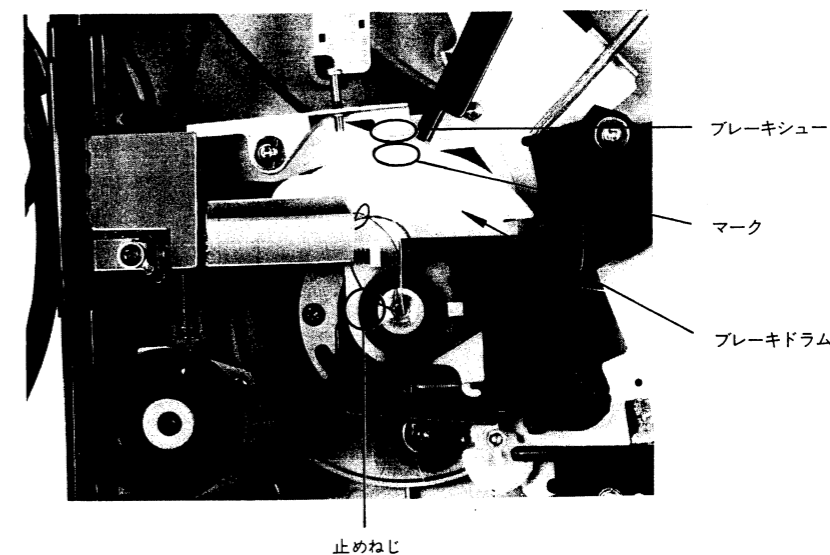


### 【トーンアーム部】



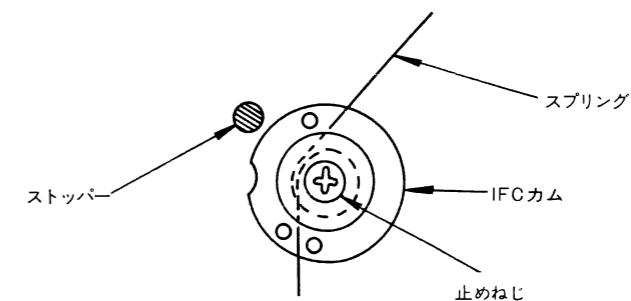
### 【ブレーキドラムの取付け】

1. トーンアームをアームレストに固定する。
2. 止めねじをゆるめブレーキドラムのマークをブレーキシューにあわせる。
3. 止めねじをしめる。



### 【アンチスケーティング(IFC)調節つまみの取付け】

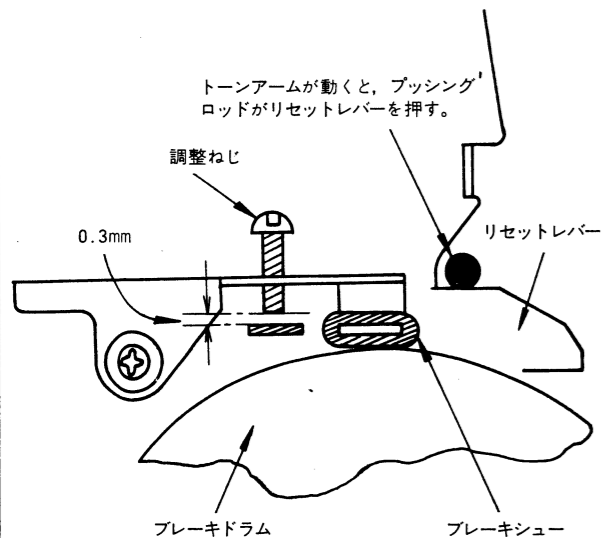
1. アンチスケーティング(IFC)調節つまみを"0"にあわせる。
2. 図のようにスプリングを取付ける。
3. 止めねじをしめる。



機構部調整

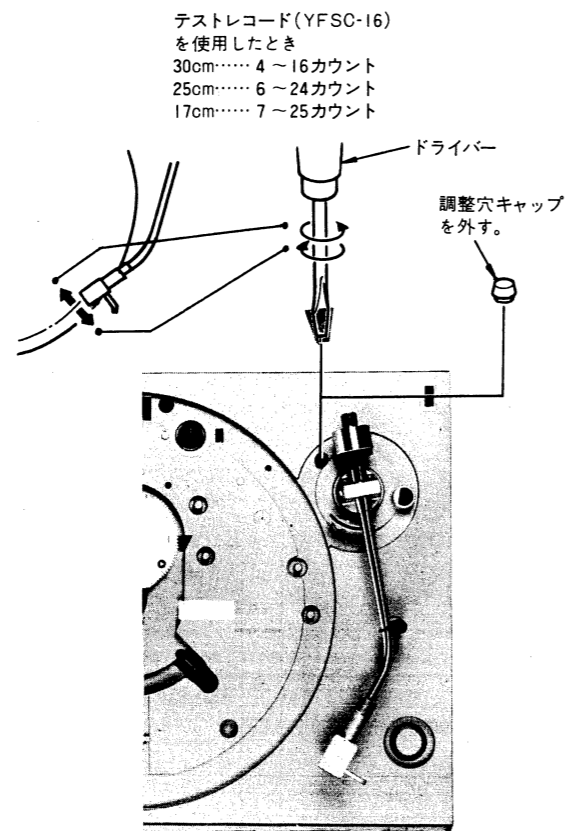
【ブレーキ調整】

1. ドライブギヤを反時計方向に回すとトーンアームが内側へ動き、ブレーキシューがブレーキドラムに接触する。
2. すき間が0.3mmになるようにねじを調節する。



【針位置調整】

1. レコードをオートスタートさせたとき、針がレコード盤上の正しい位置へ降りるように、針位置調整ねじを回す。  
(調整目安：調整ねじ1回転で12mmくらい移動する。)
- 注：レコードサイズセクターつまみの位置を30cmにして調整しておけば、25cm、17cmでも正しい位置に降ります。

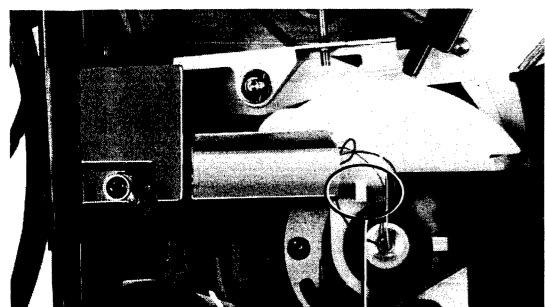


【リターン位置調整】

1. ターンテーブルを手でまわし、トーンアームが内側へ動くようにする。
2. 針とスピンドル間が61~64mmの位置でトーンアームがリターンするようにねじを調節する。

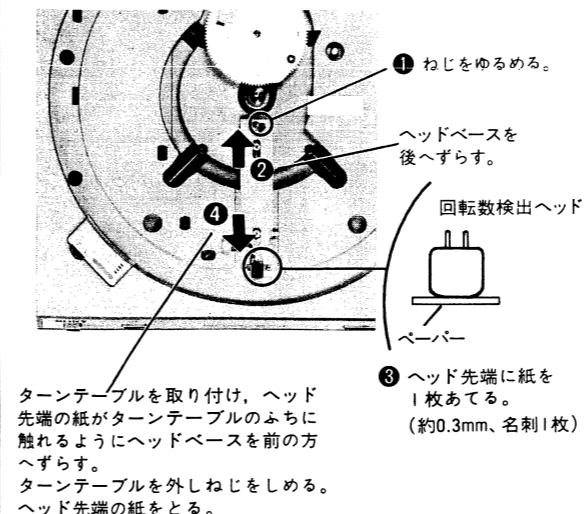
リターン時期	ねじを回す方向
早くなる	時計方向
遅くなる	反時計方向

テストレコード(YFSC-16)をかけ、リターンカウントが15~17でリターンすることを確認する。



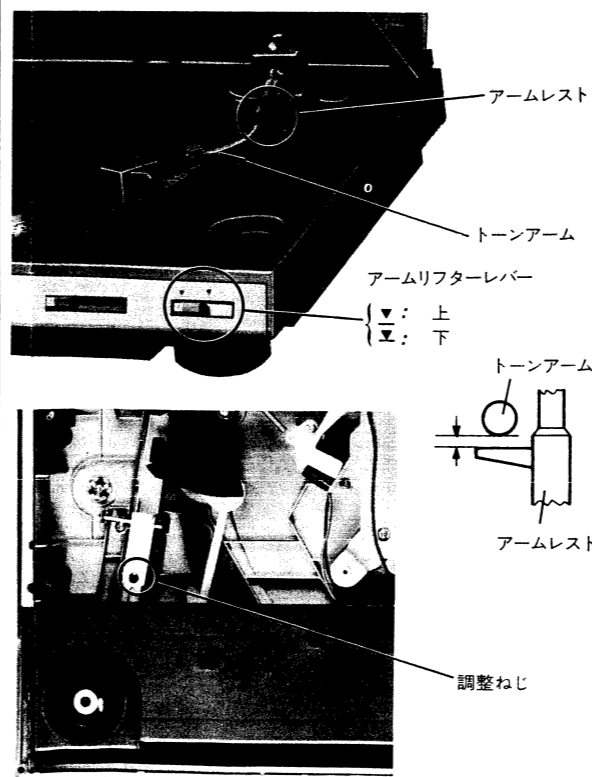
調整ねじ

【回転数検出ヘッド位置調整】



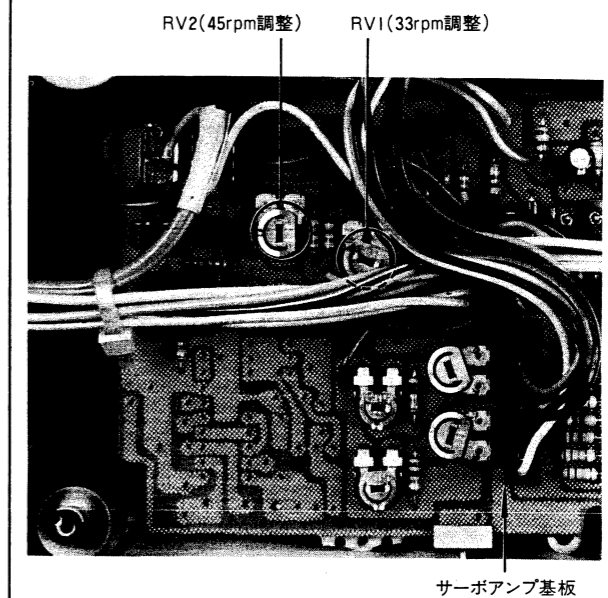
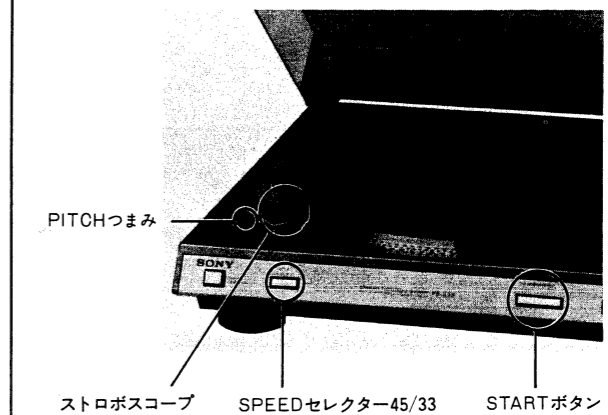
【トーンアーム高さ調整】

1. アームレストの止めを外す。
2. アームリフターレバーを上にする。
3. トーンアームとアームレストの間隔が1mmになるように調整ねじを回す。



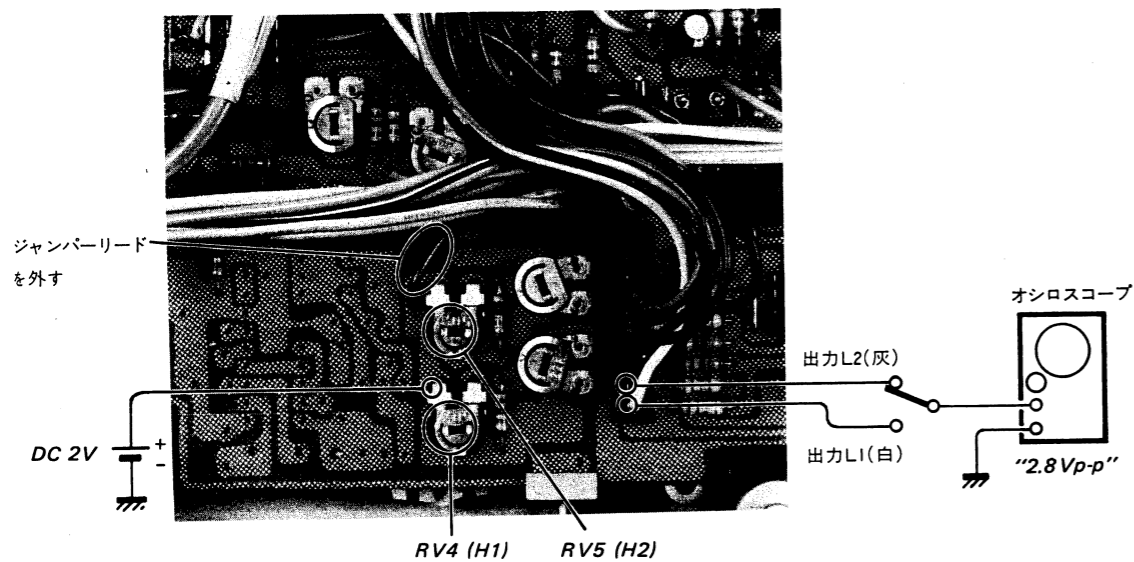
【速度調整】

1. PITCHつまみを回転角中央にあわせ START ボタンを押す。
2. SPEED セクターを33回転にセットする。RV1を回して縞目が止まって見えるように調整する。
3. SPEED セクターを45回転にセットする。RV2を回して縞目が止まって見えるように調整する。



## 【ゲイン調整】

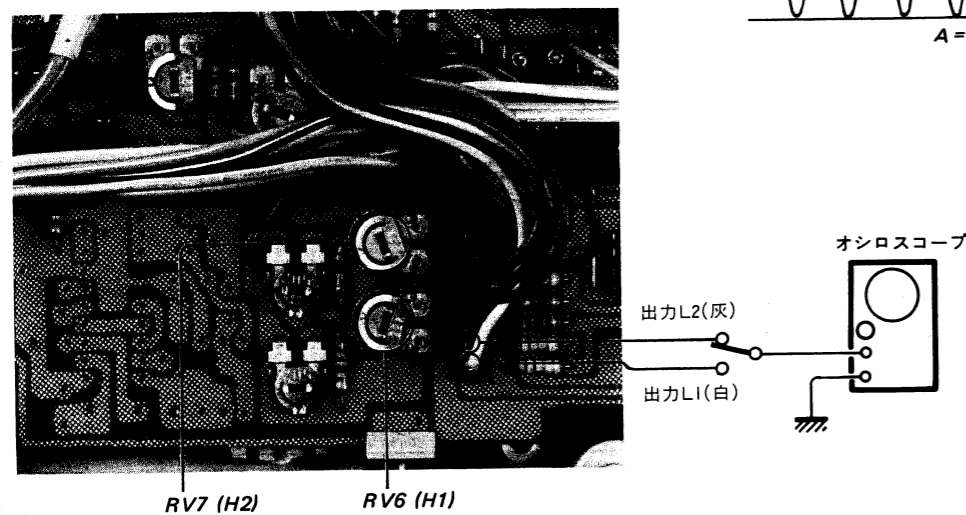
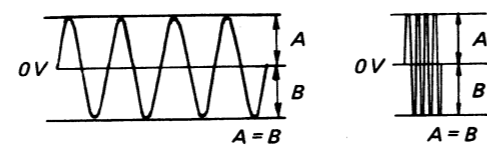
1. 図のジャンパーリードを外す。
2. DC 2Vを加える。
3. 図の出力が2.8V<sub>p-p</sub>となるよう、L1に対してはRV4で調整する、L2に対してはRV5で調整する。



## 【オフセット調整】

この調整は、ゲイン調整の次に続けて行なう。

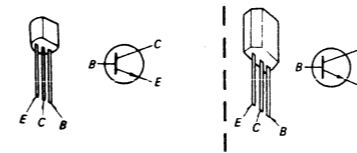
1. L1, L2にオシロスコープを接続する。
2. L1, L2の出力がGNDレベルに対してA=BつまりDCレベルオフセットしないようRV6,7を調整する。  
L1に対してはRV6で調整する。  
L2に対してはRV7で調整する。



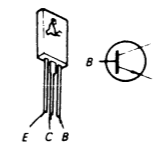
## 半導体外形図

( )内は、補修用として在庫しません。

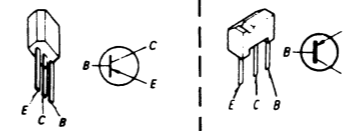
Q1~4  
Q10, 12, 14 } : 2SC1364 (2SC634A)



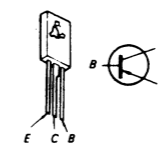
Q6, 8: 2SD809 (2SD973)



Q5, 13: 2SA1027R  
Q11: 2SA1027R (2SB642)



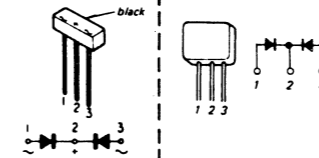
Q7, 9: 2SB731 (2SB793)



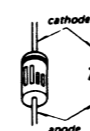
D1: 1S1555



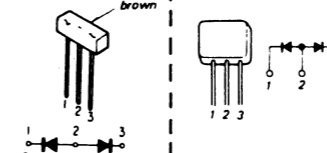
D3: S3VC40 (MI-151)



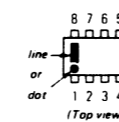
D2: EQB01-06



D4: S3VC40R (MI-151R)

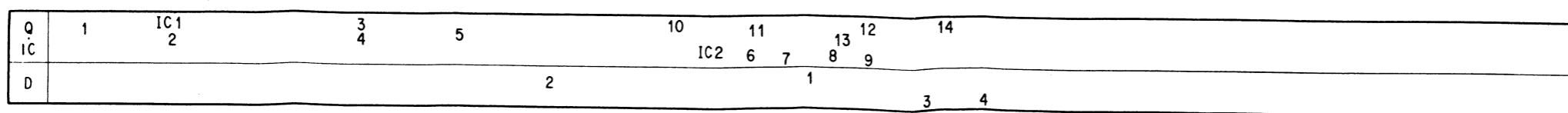


IC1, 2:  $\mu$ PC4558C

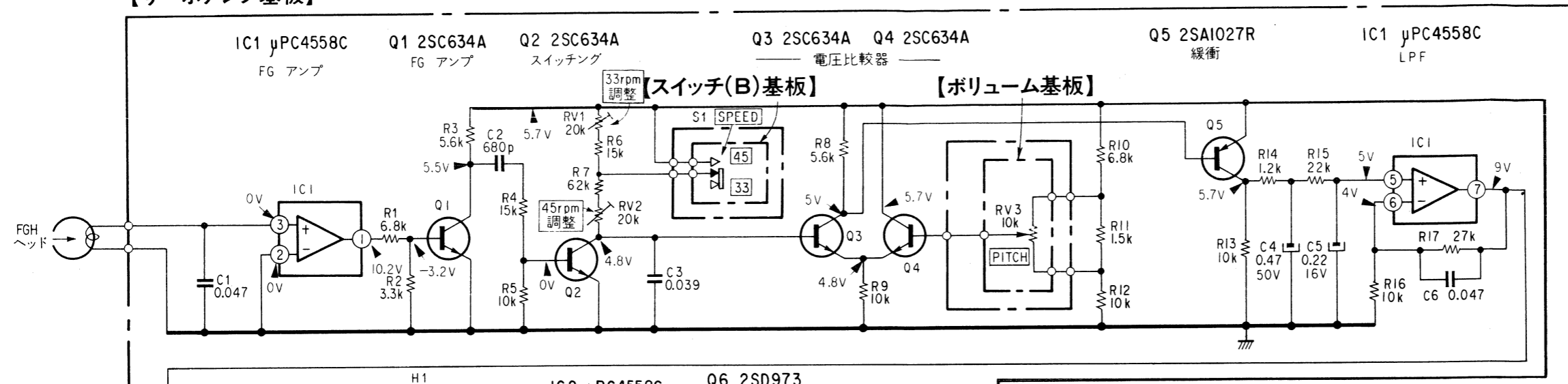


H1, 2: F-1409

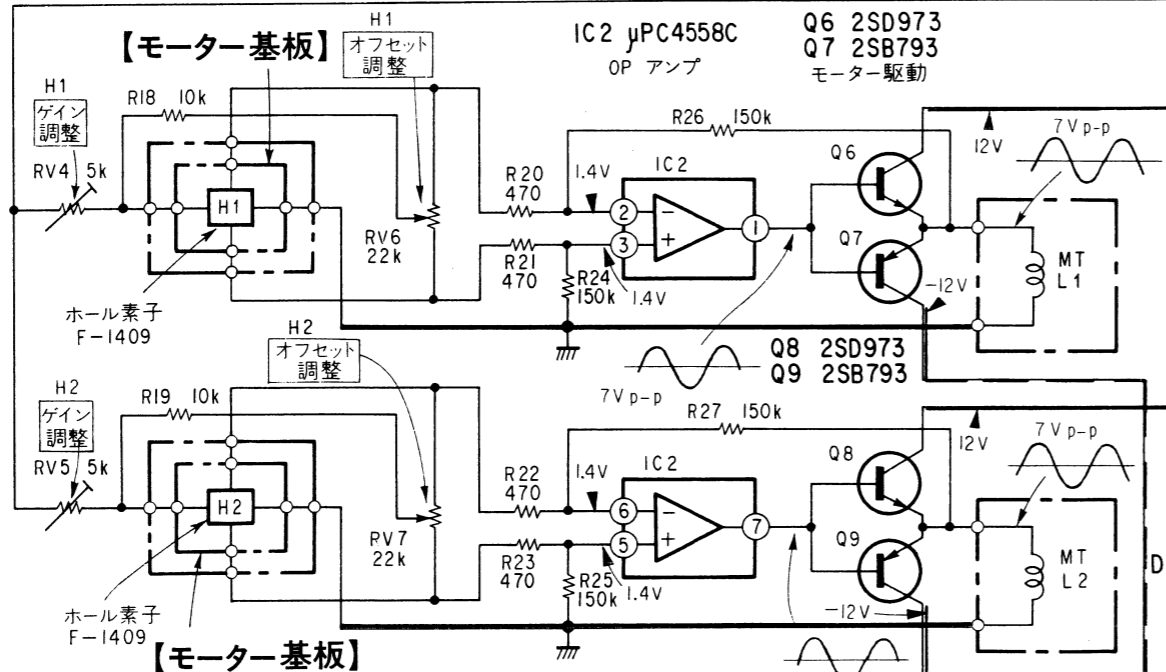




## 【サーボアンプ基板】



## 【モーター基板】

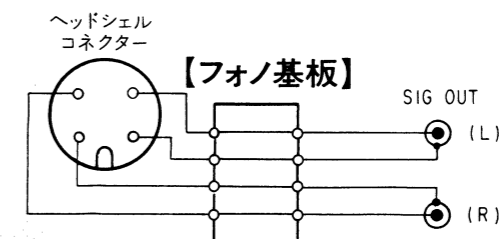
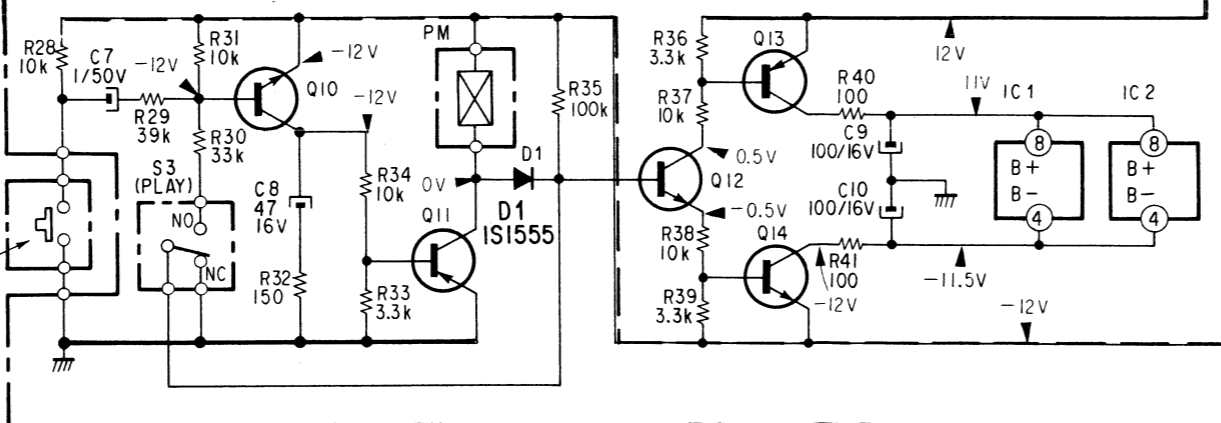


## 【モーター基板】

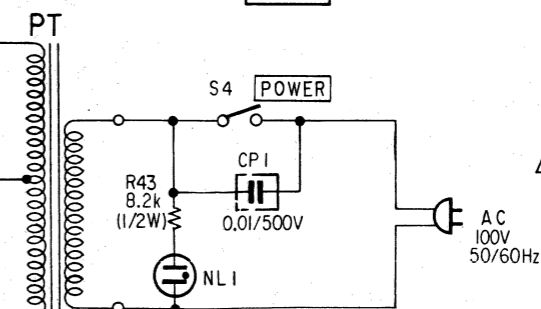
Q10 2SC634A スイッチング PM 駆動 Q11 2SB642 DC スイッチング DC スイッチング

## 【スイッチ(C)基板】

START/STOP



## 【フォノ基板】



△および印の部品は、安全性を維持するために、重要な部品です。従って交換時は、必ず指定の部品を使用して下さい

- ・ケミコンを除くコンデンサーで、耐圧50V以下のものは、その耐圧を省略。単位はすべてμF(pはpF)
- ・抵抗で指示のないものは1/4W。単位はすべてΩ。
- ・電圧は参考値。
- ・電圧値はテスター(DC20kΩ/V)を使用し、対アース間を無信号状態で、33rpm X-TAL LOCKで測定した参考値。
- ・ヘース、エミッター間の電圧は、2.5Vレンジで測定。
- ・—はB+ライン。
- ・---はB-ライン。
- ・□はパネル表示名称。
- ・□は調整名称。

・スイッチ

リファレンスNo.	名称	現在位置
S 1	SPEED	33
S 2	START/STOP	OFF
S 3	PLAY	OFF
S 4	POWER	OFF


**PS-333 PS-333**

【主要部品表】

✦：補修用のため、回路図、プリント図とは定数または型名が異なります。

・抵抗、コンデンサーは、特殊なものだけ載せてあります。  
それ以外のものは、別冊の補修用標準抵抗・コンデンサー  
価格表を参照して下さい。

記 号	部品コード	品 名	定価	備考	記 号	部品コード	品 名	定価	備考
		<b>半 導 体</b> (半導体は改良のため予告なく変更することがあります。)					<b>電 気 部 品</b>		
Q					CP1	1-102-050-00	セラミック コンデンサー 0.01μF 500V	A	
1~4	8-729-663-47	2SC1364	A	+	FGH	1-543-093-00	回転数検出ヘッド	G	
5	" -612-77	2SA1027R	A		L1,2	1-462-159-00	モーターコイル	E	
6	" -180-93	2SD809	C	+	NL1	1-519-135-00	ネオンランプ	E	
7	" -173-13	2SB731	C	+	PM	1-454-202-00	ソレノイド	D	
8	" -180-93	2SD809	C	+	PT	1-446-134-00	電源トランス	J	
9	" -173-13	2SB731	C	+	RV1,2	1-226-237-00	半固定抵抗 22kΩ 33,45rpm	A	
10	" -663-47	2SC1364	A	+	RV3	" -196-00	可変抵抗 10kΩ-B PITCH	C	
11	" -612-77	2SA1027R	A	+	RV4,5	" -235-00	半固定抵抗 5kΩ ゲイン	A	
12	" -663-47	2SC1364	A	+	RV6,7	" -237-00	可変抵抗 22kΩ-B オフセット	A	
13	" -612-77	2SA1027R	A		S1	1-553-071-00	キースイッチ SPEED	E	
14	" -663-47	2SC1364	A	+	S2	1-552-539-00	" START/STOP	B	
IC1,2	8-759-145-58	μPC4558C	F		S3	1-516-657-00	マイクロスイッチ Play	D	
					S4	" -657-00	" POWER	D	
D						1-452-127-00	マグネット	G	
1	8-719-815-55	1S1555	A			" -166-00	"	B	
2	" -931-06	EQB01-06	D		1-549-096-00	カートリッジ VL-37G	S		
3	" -500-34	S3VC40	E	+	1-551-472-00	電源コード	D		
4	" -501-34	S3VC40R	E	+	" -731-00	プラグ付コード	F		
H1,2	" -814-09	F-1409	F		1-561-294-11	ヘッドシェルコネクター	G		
		<b>コンデンサー</b> (すべて標準部品のため省略)							
		<b>抵 抗</b>							
R43	1-244-895-00	8.2kΩ ½W カーボン	A						

**!** および  印の部品は、安全性を維持するために、重要な部品です。従って交換時は、必ず指定の部品を使用して下さい。

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【分解図】

**A**

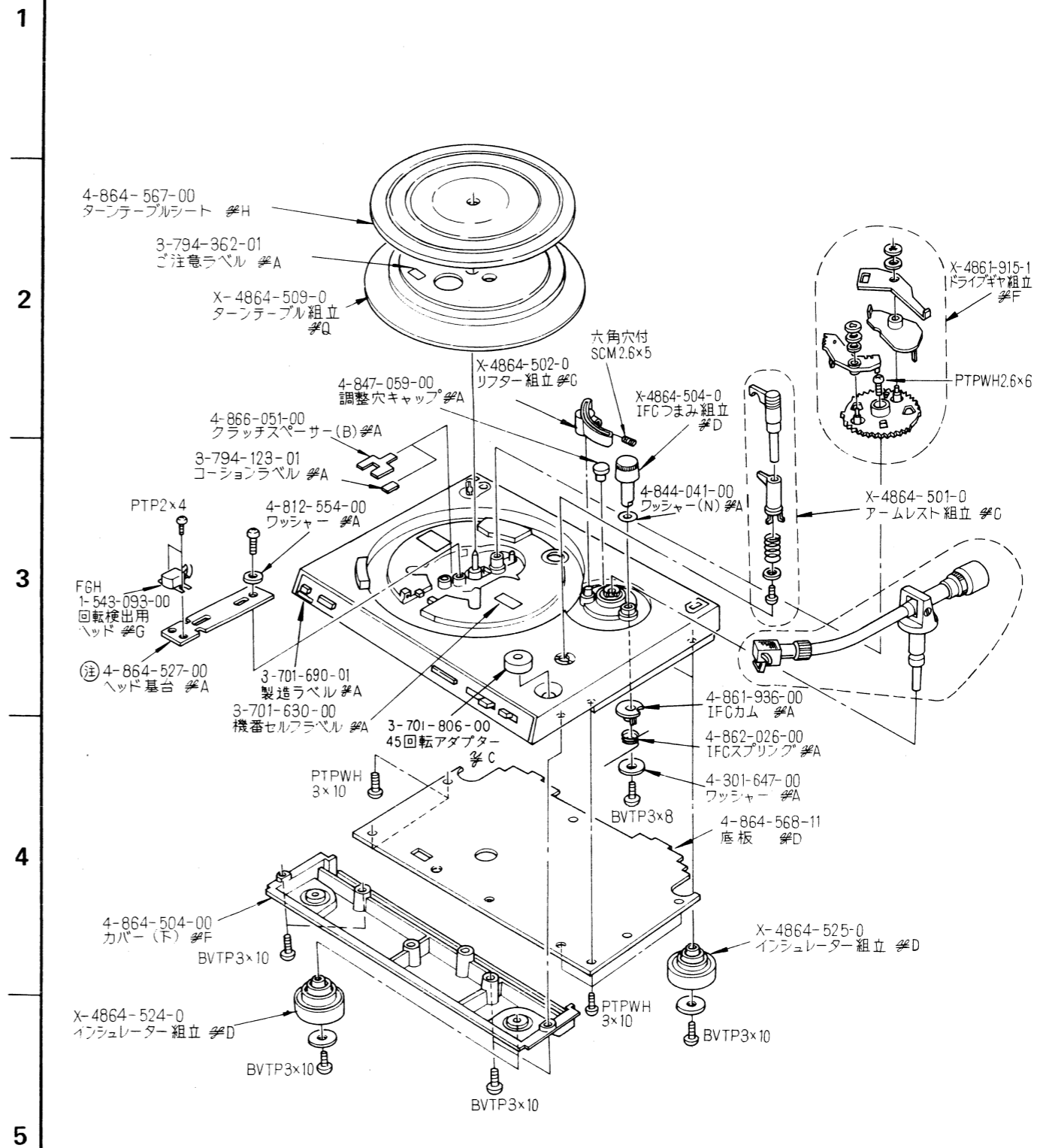
B

C

D

・ねじ類で特に表示のないものは⊕を示す

⑨の部品及び部品コード、品名のない部品は在庫しません。



9-958-701-11

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